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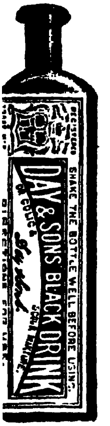

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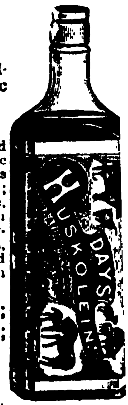

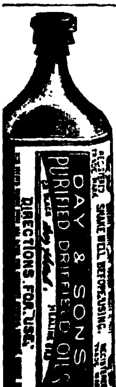

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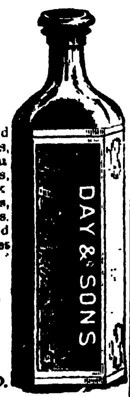

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JOURNAL

OF THE

BATH AND WEST AND SOUTHERN COUNTIES SOCIETY.

Original Articles and Reports.

I.—THE RELATIVE PRICES OF FAT AND STORE STOCK.

By A. T. Matthews.

The difficulty experienced by graziers in obtaining store cattle at a price sufficiently low to leave a margin of profit when they are sold to the butcher is one of very old standing. In a certain sense, graziers are manufacturers, store stock representing their raw material and meat their finished article.

Commercially, the feeders' position is not a strong one. They have no control whatever over the market for their commodities, which is open to the competition of the whole world, while, on the other hand, when the value of meat is high, they compete keenly with each other in the market for stores.

Their business is also subject to other serious drawbacks, such as a sudden advance in the cost of feeding stuffs, or the occurrence of a bad grazing season, which may easily upset their most careful calculations. One of the most justly dreaded contingencies is the setting in of a long and severe drought, such as that of last summer, the effects of which are always the same. At first the cattle thrive on very short commons, and up till the end of July, come to market in good condition. But as the pastures become brown and bare, farmers become alarmed and glut the markets with half-fatted cattle, thereby reducing prices till the prospect of any profit recedes to vanishing point. In the spring of 1911 store cattle were unusually dear, and graziers began the season heavily handicapped. Then came the drought, which, with a few breaks, lasted nearly till

Michaelmas, and, as the end of July approached, the condition of the animals sent to market began to deteriorate, and the price to fall, till in August, average values were about £4 10s. 0d. per head less than those of the same period in 1910. Many thousands of cattle were sold for less than the grazier gave for them, and where there was a margin it was generally too narrow to admit of any profit. While, therefore, it was a good season for the rearer, so far as his spring sales were concerned, it was a disastrous one for the finisher. The graziers' heavy losses were, of course, mainly due to the long drought, but it was never likely to be a very profitable season for them after the boom in stores which existed in April. So keen was the competition that the price of lean cattle in spring was often as high as 40s. per live cwt., which was quite as high a rate as they could reasonably expect for the finished animal, whereas there should always be a margin of 3s. or 4s. per cwt.

CHRONIC SCARCITY OF STORES.

When we endeavour to take a broad and comprehensive view of this subject we quickly find that it presents complications. From the national standpoint it is evident that the one great thing to be desired is that we should produce as much beef as possible, but the industry as a whole, is virtually split into two distinct sections, whose interests seem, at first sight, far from being identical. The grazier, or feeder, ardently desires that stores may be plentiful and cheap, while the breeder and rearer never find the price too high, and so long as the present system of cattle management in this country continues, this diversity of interests must hold good. If, therefore, the demand for the finished article were limited to the present output, any considerable increase in the numbers reared would mean lower prices and diminished profit to the rearer, while the position of the feeder, as the middleman, would not necessarily be affected. When we produced sufficient beef for the country's needs without importation, a comparatively small increase of young lean stock would dislocate markets and reduce values, but that is not the condition of things we now have to face. There is an ever growing deficiency in the supply of fresh-killed beef, and the demand for this article, if fraudulent misrepresentation were rendered impossible, would be practically unlimited. Putting aside such disturbing factors as prolonged droughts, during which we are making abnormal reduction of stocks, it is quite obvious to the disinterested observer that there is a permanent shortage of stores, and that a very large increase in rearing would have but

small influence on the price of home grown beef. For many years the stall feeders of East Anglia and the graziers of the Midlands have been crying out for the removal of the embargo on Canadian stores, and were it not for the supplies from Ireland, it is evident that the fattening industry, as it is now conducted, must have been reduced to small proportions.

As regards the possibility of looking to Canada to supplement our native resources, there is every appearance that even if we were compelled to do so, we should look in vain, for during the last two or three years the export of both live cattle and dead beef from North America has been rapidly decreasing, and threatens to vanish altogether. The enormous increase of population in the States, and even in Canada, is absorbing all those countries can produce, and it is now only the southern hemisphere that stands between us and absolute scarcity. The "Rancher" beef of Canada, which in former years at this season flooded our markets with inferior beef, has this year been conspicuous by its absence. These were the cattle that, had our ports been open to them for other purposes than slaughter, would have come to us as stores, but, as they have ceased to come at all, the controversy which has so long raged on the question of admitting them as stores may now be regarded as closed.

The Causes of the Shortage.

It is most important that we should realize why it is that England fails to produce sufficient lean stock to satisfy the demands of the grazier and stall feeder, although the prices they are prepared to pay for them are generally quite remunerative. The reason is found in the steady growth of another branch of our pastoral industry. In the darkest days of agricultural depression a refuge from utter ruin offered itself in the production of new milk. For the genuine article, fresh from the cow, there was, and is, a constantly growing demand, and one which has to be met by native effort, unassisted by the intrusive importer. It is the one monopoly of British farmers, and one that, in the nature of things, they are not likely to lose. Preserved milk in many forms meets with a large sale, but, as a food for infants, it can never supplant the fresh supplies from our own farmers. Those who have any doubts on this point should read Dr. F. J. H. Coutts' "Report to the Local Government Board on an enquiry as to Condensed Milks; with special reference to their use as Infants' Foods." The result of that report will probably be the acceptance of the author's advice by the Department, and the issue of an

order that all condensed skimmed milk shall be labelled as unsuitable for infants. Such a step must infallibly check the consumption of preserved milks and increase the demand for new milk in a corresponding degree. It may be asked how all this affects the supplies and value of store stock, but the writer believes that the business of the milk-selling farmer is intimately connected with that question.

The vast bulk of the milk trade in towns is carried on by means of contracts, which are made yearly between the farmers and the great milk companies who supply the retailers. The dairy farmer almost always undertakes to supply as large a quantity as possible, and is often put to it to fulfil his engagement. Calves are, therefore, regarded by him as an unmitigated nuisance, to be got rid of at the earliest possible moment. He will not even keep them till they are strong enough to go to market to sell as weaners, but a dealer calls and takes them off, say, at three days old, paying about 5s. each for them. They are knocked on the head and appear in the London Central Market, where they hang sprawling by one leg in rows of 50 to 100 at a time, wretched little bony carcases, known there as "bobbies" (a corruption, perhaps, of "babies"), and certainly do not look fit for human food, in fact, they can only be used for sausages or some other similar purpose. Such meat is not really wholesome, being apt to cause diarrhœa, or something worse. There is no doubt that the system of inspection should be altered in this respect. The officers (at least in London) do their duty well so far as tainted meat is concerned, but beyond that you may sell almost anything you like in Smithfield Market. If the subject were investigated this unnatural slaughter of the innocents, which is prejudicial to the public health and a wicked waste of the country's resources, would probably be stopped.

While referring to the causes of the restricted supplies of store cattle there is one that should not be passed over without notice, for it seems more susceptible of a remedy than the premature slaughter of calves, unless, indeed, the latter could be dealt with by legislation. Curiously enough, in considering it, we again come into collision with the question of the milk supply, which from every point of view seems inimical to the production of beef. The system of management pursued in town dairy herds is answerable for an enormous annual leakage of excellent breeding animals. However highly bred, or however good a milker a cow may be, whether young or old, handsome or ugly, when once she comes into the possession of a town dairyman her career is over, for after a few months' milking and high feeding, she goes straight to the butcher, and her services are lost to the country.

From the point of view of the town cow-keeper, this is doubtless the best, and, probably, the only plan open to him. It is quite out of his line of business even to contemplate any other. Even if he kept a bull on the premises and allowed the cows to breed again instead of fattening them off, he could neither calve them himself nor easily find country buyers for animals which had been immured for many months in not too wholesome sheds (oftentimes underground), and, in all likelihood, not free from disease germs.

The prices these cows make in the market vary from £5 to £20, according to age and condition, the average being certainly not more than £15, and the writer has seen thousands of well-bred young cows sold at that price which would be worth, at the very least, £22, if down calving or newly calved.

Should any reader doubt the accuracy of these figures, let him attend the market at Islington and see for himself. On one side of the enclosure he will find a number of newly calved cows, the best of which often fetch £25, without the calf, and fairly good ones £22. Walking across to the other side he will come upon the "drape," or cast-off animals, sent by the cowkeepers for sale. Watching the prices these make, his fingers would itch to buy them if he were a dairy farmer with some rough grazing land where he could run them cheaply round till they could again produce a calf. He could not do so, however, without grave risk of introducing tuberculosis or some other disease into his herd, and so this shocking waste of material which can so ill be spared will go on, so long as town cow-keeping is allowed by the authorities. The drain on our young cows in this way is very large, for it is not only in London, but in every great urban centre that this pernicious system is followed. The London County Council is severe enough with the butchers, who are the farmers' best friends, for they are driving them out of existence by closing the private slaughterhouses. There were 1,500 of these under the jurisdiction of that autocratic body a few years ago, but there are now only 300, and these also are doomed to extinction. This is why the farmers' market at Islington has dwindled to about one-fourth of its former size, and the Londoner lives on foreign meat.

A well-managed and properly inspected slaughterhouse entails no danger whatever to the public health, but what of the milk that is produced in the dens where town dairy cows are kept?

In many of these places the fresh air is jealously excluded, under the impression that the warmer a cow is kept the more milk she will give, and it is quite obvious that they must be hot-beds of disease. In these days of easy transit for milk there is no necessity whatever

for the existence of such dangerous things as cowsheds in towns, and the sooner they are abolished the better it will be for the milk consuming population, for the dairy farmer who carries on business under natural conditions, and for the increase of our stock.

STEADY INCREASE IN VALUE OF STORES.

Only within the last eight years has any systematic attempt been made in Great Britain to collect information on current market prices of store stock, a task commenced by the Board of Agriculture in 1903, with their system of official market reporting. Our available records are, therefore, somewhat scanty, only going back to such a recent date. They are already, however, beginning to be valuable, and can be relied upon for their accuracy. All market reports issued by the Board in their weekly "Return of Market Prices" are based on facts collected by men selected for their practical knowledge and experience. These men supply the prices of store stock from every important market in Great Britain, which figures are carefully tabulated, and averages struck every month and every year, for the five leading breeds, viz.: Shorthorns, Herefords, Devons, Welsh Runts, and Polled Scots.

Let us take three-year-old Shorthorns as a fair example, and note their value per head for the last six years. In 1905 this averaged £15 16s.; in 1906, £15 14s.; in 1907, £16 10s.; in 1908, £16 15s.; in 1909, £17 2s.; and in 1910, £17 14s. These are very remarkable figures, and, as already stated, perfectly reliable. They show a steady advance in values, which also applied to store stock of all ages and breeds. It is true that the average price of beef also slightly advanced in each of these years, but not in proportion, except for the last two years. Even if the grazier's returns had increased sufficiently to cover his extra outlay on stores, that would not affect the statement that a permanent scarcity of these has set in. A better price should have encouraged the rearing of larger numbers, but it has quite failed to have that effect, for in the spring of 1911 the value was higher than ever.

INCREASE IN TOTAL NUMBER OF CATTLE.

The total number of cattle in Great Britain on June 5th, 1911, was 7,114,264, an increase of 76,937 over that of 1910, or 1·1 per cent. This forms a record, and is, so far as it goes, satisfactory. A close examination of the figures shows that it is the extension of the milk-producing industry that is responsible for the major portion

of the increase. Cows in milk or in-calf have been steadily increasing for several years, and this year those in-calf but not in-milk went up 9·8 per cent., while yearlings decreased by 2·2 per cent. There cannot be a doubt that the dairying industry is rapidly expanding, while the rearing of steers for grazing purposes is at a standstill, if it be not actually declining. That such is the case seems the more certain when we find that Irish stores are coming over in much larger numbers. In 1910 no less than 543,250 were received, being nearly 38,000 more than in 1909, and the largest number since 1903.

Under present conditions the Irish supplies are all important to the British graziers and stall-feeders. Indeed, without them their business in its present form would virtually come to an end. In 1910 the total number of store cattle entering 54 principal markets in Great Britain was 1,004,599, and as the Irish supplies would certainly be included in that total, we are confronted with the startling fact that only half of the cattle available for those graziers and feeders who rear none for themselves, are bred in Great Britain, and it may be taken as proved that British farmers are becoming less and less inclined to rear steer calves for the production of British beef.

THE PROFITS OF REARING.

We may now enquire a little into the probable reasons for the refusal to meet a demand which is not only constant, but offers remunerative terms. It has been long held by the writer that one of the chief of these is the *supposed* trouble, difficulty and expense of weaning, which are greatly exaggerated, while the extra care required in the first stages of a calf's growth is well repaid. Reference has already been made to the official market returns of the prices of store stock, as showing a gradual advance in recent years. They also show something else of great interest bearing on this subject of calf-rearing. The prices are collected and quoted for three classes or ages, which are called "Yearlings," "Two-year-olds," and "Three-year-olds." These terms are explained as follows in the Weekly Market Returns: *Yearlings* comprise, generally speaking, animals from about 10 to 22 months old; after that age they are classed as *Two-year-olds* till about 30 months. Older animals are classed as *Three-year-olds*. Now, the average prices of Shorthorn stores, classed as above, for 1910, were: *Yearlings* £10 9s. (first quality); *Two-year-olds*, £14 16s.; and *Three-year-olds*, £17 14s. Thus taking the average of a "yearling" at 16 months, we see that it has attained to considerably more than half

its value by that time. Putting this in other words, we may say that the first year of a calf's life is the most profitable period of its existence as a "store." Far back in the days of our youth we remember our elders discussing this question, and they would say: "Calf rearing? Yes, it pays like little pigs at £1 apiece," meaning when the pigs were sold at that price as soon as weaned.

LOOKING AHEAD.

This article would be very incomplete without some reference reference to future prospects, so far as they seem to be foreshadowed by current events and leading facts in the present position of the cattle trade at home and abroad. So far as the dairy section of British stock-farming is concerned, no arguments are required to show that it holds an extremely strong position. It enjoys a steady and ever increasing demand for, and a virtual monopoly in, the supply of new milk, which is the most profitable of all dairy products, all waste and cost of manipulation being avoided. Of the profits of butter-making we say nothing, but the cheese industry is more than holding its own, for foreign competition is actually diminishing, and no one can touch us for quality.

The production of beef stands on an entirely different footing. Here we have anything but a monopoly, but instead the keen rivalry of vast countries oversea which possess boundless resources, easy and cheap transit, and the free use of our markets. It is not too much to say that the home producer often stands appalled by the statistics of importations and the glowing statements of how this or that country is going to feed the world with beef in the not distant future.

We need not quote arrays of figures to demonstrate the growth of meat imports during the last twenty years, but in beef alone the increase amounts to nearly five million cwts. per annum. Such figures are disconcerting even to the home producer who only takes a superficial view of the position. Let us see if there be no other facts within our knowledge which render them less ominous. In the first place, during the same period of this great increase in the imports of dead beef, there was a decrease in those of live cattle, amounting to 423,000, reducing the net increase to less than half. But there is something far more significant than this, bearing on the probable future of the cattle industry of these islands, as it is likely to be affected by foreign imports. Dividing the years that have elapsed since 1890 into two decades, we are able to compare the prices which have ruled for home-grown beef in each of those

periods by means of figures admirably presented in the Agricultural Statistics, 1910, Part 3. We find that the average prices of fat cattle at the Metropolitan Cattle Market during the last ten years of the 19th century, were 4s. 7d. per 8lb. stone for first quality; 4s. for second; and 2s. 7d. for inferior. In the first ten years of the present century, these were, 4s. 9d.; 3s. 11d.; and 2s. 9d. respectively. There was thus an increase in the average price during the latter period of 3·6 per cent. on first; a decrease of 2·1 per cent. on second; and an increase of 6·5 per cent. on inferior cattle, the net increase on the three qualities being about 4 per cent. Such a result is as surprising as it is reassuring, as we are speaking of a period of unexampled foreign competition in the face of which British beef has become appreciably dearer.

The fact that the supply of live cattle has so largely diminished has told strongly in favour of the home producer, because the market was deprived to that extent of fresh killed beef, and the average advance in the price of British beef is highly suggestive, showing how much the public prefer, even at a far higher price, fresh killed meat to frozen.

Judging, then, by the past, there appears to be strong ground for supposing that the growth of population and the higher plane of life of the wage-earning classes, to say nothing of any increase in the general wealth, are more than keeping pace with our supplies in spite of the constantly swelling volume of imports, of which we enjoy a virtual monopoly.

It is taken for granted that this monopoly will be permanent, but the consuming classes of this country may some day find that they have been living in a fool's paradise. We have no prescriptive right to the world's surplus, while there are other vast populations who would like to share it with us, but whose own fiscal laws bar the way. How long the democratic element in Germany and Austria will submit to the exclusion of cheap foreign meat no man can say. So far the masses of the towns have protested in vain against the idea that meat is a luxury only for the wealthy, but the country party has been too strong for them. Such a state of things in an age of "social progress" is scarcely likely to endure, and a startling change may come at any moment. When Central Europe opens its ports to chilled and frozen beef from the southern hemisphere there will be a rude awakening for the people of this country who have so long been cheaply fed. This is no fancy picture, and what has been happening within the last few months, on the continent of Europe, should prepare us for its realization at no distant date. This too would be foreign compe-

tition but with the usual meaning of the term reversed, for it would be a competition that would greatly enhance the value of our native produce, and compel the encouragement of British stock-farming.

COULD WE INCREASE OUR STOCK?

We have attempted to show in the foregoing that pessimistic views as to the future prospects of cattle-raising in this country are opposed to facts, that these prospects depend upon the supply and demand of the meat trade world, and that a substantial increase of British home-bred stock is eminently desirable. It remains to enquire whether there are any reasonable means by which such an end can be attained, in spite of the difficulties that present themselves. A letter was addressed to the Secretary to the Board of Agriculture in May last, by Mr. George Grey, a prominent land agent in Northumberland, calling the attention of the Board to the shortage and excessive price of store cattle, and this letter, with Sir Thos. Elliott's reply, was published in *The Times* on July 17th. Mr. Grey does not hesitate to say that the chief cause of the trouble is the slaughter of calves by dairy farmers instead of weaning them, and that, personally, he would be in favour of prohibiting the slaughter of calves for veal, but recognises that such a course, for various reasons, is out of the question. Unfortunately, he is not prepared with any practical proposal at all likely to have any marked effect. Sir Thomas, in his reply, points out that the Board's Return of Market Prices gives all the information possible on the value of stores, a fact of which Mr. Grey appeared to be ignorant. He goes on to say: "As the production of milk for the sole purpose of sale increases, the difficulty experienced by the dairy farmer of finding a local purchaser for his calves, who really wants them for rearing, increases in like proportion, and the question as to what can be done to facilitate the easy and rapid transfer of young calves from the cow owner to farms adapted for their rearing, without detriment to the condition of the animals, is a very important one. It is anticipated that some system of co-operation between farmers, whereby this object might be achieved, will form a fundamental part of any scheme for the improvement of cattle breeding which may be framed by the Board under the Development and Road Improvement Funds Acts."

These are words of the utmost importance, and have been taken very seriously as being in the nature of a pledge that the Board will use its influence to get something granted from the Fund for the encouragement of cattle breeding. They also recognise the difficulty we are now considering, and the duty of the Board to assist in its removal.

OTHER POSSIBLE EXPEDIENTS.

If it be granted that the rearing of more home-bred stock would be for the good of the nation at large, and that of the agricultural interest in particular, it seems to be one of those matters with which Agricultural Societies, Farmers' Clubs, and Chambers of Agriculture are well fitted to deal, and there is little doubt that if these bodies took up the subject in earnest, we should soon see an improvement. A very few of them are already attempting to carry out admirable schemes, which include the purchase of pure-bred bulls for the use of their members—one of the most hopeful signs of the times that has appeared for many years. Short of undertaking such a bold enterprise as this, Societies could do a great deal by giving the subject adequate discussion, and so rousing the attention of farmers to its importance. They might also encourage calf rearing by giving prizes. Possibly a competition might take the form of a premium being offered for the largest and best rear of calves, not less than six months old, in proportion to the size of the holding. Farmers would probably bitterly resent being driven by prohibitive legislation, but they might be influenced by reason and encouragement. Some years ago the late Queen Victoria refused to have lamb on her table as a protest against excessive slaughter, and it is said that the effect was quite perceptible for some time afterwards.

WEIGHING STORE CATTLE.

The practice of weighing store cattle does not seem to commend itself to British farmers or dealers except at two or three markets. There are more weighed at Shrewsbury than at all other markets together, and only 60,385 were weighed in the whole of Great Britain in 1910. Yet, if the system were generally adopted, it would be an admirable guide to real values, and tend to steadiness of trade. Mr. Grey, in the letter above referred to, pointed out that in May, 1911, the price of stores in his country was ranging from 42s. to nearly 50s. per live cwt. At the same time fat Shorthorns were only worth about 38s. per cwt., and, therefore, graziers were purchasing at a price which meant certain loss. They were speculating for a rise in beef, which has not taken place.

REARING AND FATTENING DISTINCT INDUSTRIES.

The dual system of cattle management very largely prevails. It may be necessary, owing to natural conditions: at the same

time we think we see in it great hindrances to improvement. Before referring to these let us see what our old friend, Mr. R. H. Rew, says on this point. In the Agricultural Statistics recently published he writes as follows :—

> "The rearing and fattening of stock in this country, generally speaking, are two distinct branches of farming carried on by different persons. It is possible that this specialisation is in some cases unnecessary, and that breeders might more frequently feed their own stock, thereby securing the whole profit and saving the cost of double marketing and of middlemen's costs. But in the main the division is imposed by natural conditions of soil, climate, and situation, and the best economic results are obtained by rearing beasts in one district and fattening them in another. In any case, there is no doubt that the greater number of cattle are sold as stores, and subsequently, at intervals, varying from a few weeks to one or two years, also sold as fat."

These statements are doubtless true in the main, but in the present writer's view, they admit of more qualification than appears in the text. It is obvious that some farms could never fatten a beast on their own resources, and are, therefore, more suitable for breeding and rearing or dairying. On the other hand, there are large districts of fine pasture-land on which nothing pays so well as beef making, always supposing that stores are procurable at reasonable prices. In both cases, however, the conditions are exceptional and the description would not apply to the great bulk of the land of England. Systems of farming are often the results of the habits and customs of the past, and there is no industry in which those who follow it are so prone to moving in ruts as that of farming. If all cattle could be bred, reared and fattened on the same farms that would be the ideal system. For one thing, as Mr. Rew tells us, all middle profits would be saved to the producer, and the whole business would stand on a more stable basis. While that appears to be impossible there seems no visible reason against its adoption on thousands of mixed arable and pasture farms with soil of medium quality.

But the greatest drawback of all to the present division of cattle owners into two camps, is one that is seldom mentioned. It sets up a solid barrier against improvement of breeding. What difference does it make to the ordinary rearer, whether his stock are bred on the best possible lines for rapid and economic fattening? Of course, we are not saying that feeders will not give a better price

for well-bred animals than for mongrels, but it is quite certain that the majority of rearers pay very little attention to such difference in value. He buys many of his calves at a few days old without any enquiry as to their breeding, and certainly he would not dream of buying a pedigree bull for his own cows. The man who breeds the larger portion of his own stock and also finishes them for the butcher has, on the other hand, the strongest possible inducement to do his utmost in the direction of improvement.

II—THE ERADICATION OF SHEEP SCAB.

By John Hughes, F.I.C.

WHAT HAS BEEN DONE IN THE PAST.

Why is it that Sheep-Scab has not been eradicated in this country? Veterinary authorities have stated that if effective remedies are properly applied this troublesome parasitic affection of the skin can easily and readily be cured.

In New Zealand it was estimated in 1881 that there were 700,000 sheep suffering from scab. In 1884 the Government decided to enforce vigorously the statutory powers given them under the Act of 1878, and within two years the scab infected area was reduced to a small tract of mountainous country; while since 1893 there has been no sheep scab in New Zealand.

In Tasmania the entire sheep stock was in 1869 reported to be infected with scab, but within ten years after the adoption of compulsory measures the disease was extirpated, and since 1879 the colony has been free from sheep-scab.

In Australia equally satisfactory results had already been obtained by adopting compulsory measures and effective treatment.

In Great Britain, on the other hand, though there has been much legislation, the results have not been satisfactory, and sheep-scab is still very far from being eradicated. Thus, as far back as 1798, an Act was passed forbidding the depasturing of scabby sheep on common lands and requiring that all sheep on such lands should be marked with the owner's initials with a view to identifying any owners who should offend against the Act.

Sheep-scab was included in the list of contagious diseases in the Act of 1869, and in 1870 it was computed that 76,718 sheep were affected with scab, while in 1888 the figures had declined to 18,762.

Towards the close of the last century, however, the disease

appears to have increased, for in the Annual Report of the Veterinary Department of the Board of Agriculture for 1893, the Assistant Inspector remarks that for years sheep-scab has been the most prevalent of the contagious diseases of animals in Great Britain, and that during the last year, 1893, it was more widely spread than in any of the five preceding years.

The Diseases of Animals Act, 1894, vested powers in the Board of Agriculture and Fisheries to issue special orders in regard to regulations for the prevention of sheep-scab. In 1895 a special Sheep Scab Order was issued, but in 1899 the Kent and Romney Marsh Sheep Breeders' Association unanimously passed a resolution that the then existing regulations in respect to sheep-scab were inadequate, and this resolution was subsequently supported by the Central and Associated Chamber of Agriculture.

It was not until the 8th April, 1903, however, that the late Mr. R. W. Hanbury, then President of the Board of Agriculture, appointed a Departmental Committee to investigate experimentally, and to enquire into and report upon :—

1.—The composition and essential constituents of efficient dips and other preparations for the treatment and dressing of sheep.

2.—The methods in which such dips and other preparations should be employed.

3.—The times and intervals at which sheep should be treated or dressed.

This committee examined thirty-one witnesses, and carried out three sets of experiments with fifteen different sheep-dips upon 140 scabbed sheep at the Welsh University College Farm, at Madryn, Aber., Bangor, under the superintendence of the Secretary, Professor Thomas Winter.

The report of this committee was published in 1904, and received severe hostile criticism, especially in regard to the sheep-dipping experiments which were considered by practical men to have been quite inadequate to afford reliable information in regard to the effectiveness of the numerous dips employed for the eradication of scab.

The committee recommended that an annual dipping of all sheep within the United Kingdom should be made obligatory upon all flockmasters, and that this dipping should be carried out by the Local Authorities acting under regulations approved by the Board of Agriculture and Fisheries, and by the Department of Agricultural and Technical Instruction for Ireland. Further, that an official

Schedule of Dips recognised as efficient should be established by the above authorities, and that makers of proprietary dips who desired to have their preparations placed in this schedule, or users of home-made dips who wished to ascertain whether their dips would be approved, would then be required to submit samples for examination, paying the required fee, and, if the examination showed the dip to be satisfactory, it would be included in the approved schedule.

To ensure that the dips actually used were not inferior to the samples approved, it was suggested that the local inspector should take occasional samples for the purpose of having them analysed.

Following the publication of this Departmental Report, the Board of Agriculture has adopted the suggested approved Schedule of Dips, but instead of universal annual dipping has preferred to issue special orders for respective scheduled areas of infection, dealing with the compulsory dipping and restricted movement of sheep under license, and subject to official inspection.

Consequently between January, 1905, and July, 1911, some thirty-one separate orders have been issued in reference to sheep-scab regulations in Great Britain.

The above is a brief review of the legislation that has been enacted in this country for the eradication of sheep-scab, and it may now be interesting to ascertain what the remedial results have been, as illustrated by the official returns of scab outbreaks in Great Britain (England, Wales, and Scotland), and Ireland, since 1900.

OFFICIAL RETURNS OF SCAB OUTBREAKS.

	Great Britain.	Ireland.
1901	1,537	545
1902	1,664	613
1903	1,833	655
1904	1,286	486
1905	918	339
1906	534	256
1907	751	326
1908	849	384
1909	685	424
1910	534	492

In Great Britain there has been a fluctuating but substantial decrease since the issue of the Sheep-Scab Order of January 27th, 1905; indeed, it would be strange if no practical reduction had resulted from the numerous orders and official regulations, but the

fact that as many as 534 outbreaks were reported in 1910 shows that the remedial measures have not produced the full effect hoped for.

In Ireland there does not appear to have been any practical reduction, four hundred and ninety-two outbreaks being reported in 1910 against four hundred and eighty-six in 1904.

THE CAUSES OF FAILURE—THE COMPOSITION OF THE DIPS.

When the Board of Agriculture adopted the suggestion of the Departmental Committee contained in Paragraph 34 of their Report, and established a schedule of dips recognised as efficient, a course of action was adopted which was in direct contrast to the action of restriction followed in New Zealand and the Australian Colonies, where only two dips—namely, tobacco with sulphur and sulphur with lime were *finally* allowed to be employed for the eradication of scab. But the superior efficacy of the latter dip on account of the sulphur being rendered soluble by boiling with lime was so freely recognised that it ultimately became the only official dip used in New Zealand.

To prepare this dip about 100lbs. of sulphur in the form of flowers of sulphur and 50lbs. of quicklime are mixed with 100 gallons of water in a boiler and boiled for half an hour, with constant stirring. The resulting solution should be clear and of the colour of dark brandy.

For dipping, one gallon of this clear liquid was added to three gallons of warm water, and the sheep were thoroughly immersed for from one to two minutes in the bath, the temperature being maintained at from 100°F. to 110°F. Great importance was attached to the dipping solution being warm instead of being used cold, as in this country.

Mr. P. R. Gordon, Chief Inspector of Stock in Queensland, writing in the Royal Agricultural Society's "Journal," 1892, on the cure of sheep-scab, states: "I hold from long experience that fire must be used in the preparation of any sheep-dip. To be thoroughly effective it must be applied hot."

It would be interesting to know what is the standard of effectiveness adopted by the Board of Agriculture in deciding whether a specimen sent for approval should be accepted or not, also how many dips are included in this approved schedule, and whether the dips actually sold are similar to those sent for approval?

By establishing an approved list of dips the farmer will probably suppose each to be equally effective, and thus be induced to purchase the lowest priced one.

As regards the standard of effectiveness the Board surely could not accept the experiments carried out at Madryn in 1904 as being in any way reliable, for the sheep were dipped in long wool before being shorn, instead of after being shorn, as is usual. The fifteen dips employed at Madryn all differed from each other, as shown by the particulars of composition given by Dr. Thorpe, in Professor Winter's report, and naturally the practical results would differ accordingly.

THE QUALITY OF THE APPROVED SHEEP-DIPS.

On this point the Annual Reports of the Chief Analyst give some very important and highly significant information, as follows :—

During the year ending 31st March, 1910, one hundred and forty-two samples of sheep dips, some of which were home-made and not intended for sale, were submitted to the Board of Agriculture and Fisheries by manufacturers when applying for the inclusion of their preparations in the official "Schedule of Efficient Dips." Sixty-seven samples agreed with the formulæ, and were of effective strength; thirty-six samples were deficient in active ingredients at the dilution suggested by the makers; and in thirty-nine other cases the formulæ submitted required modification to ensure an efficient dip. In addition, twenty-one samples were taken during the operation of dipping to test whether the bath in actual use could be considered effective, and out of these eight were deficient in active ingredients.

Besides the dips submitted for approval and the bath samples taken, the Board have forwarded for examination fifty-five samples of approved dips *purchased* by their Inspectors in different parts of the country with the object of ascertaining whether the dip as prepared for sale corresponded in composition with the sample which had received the Board's approval. Of these ten differed from the formulæ previously submitted.

During the year ending 31st March, 1911, two hundred and thirteen samples of sheep dips, some of them being home-made and not for sale, were submitted for approval, and of these eighty-seven agreed with the formulæ, thirty-four were deficient in active ingredients, and in ninety-two cases the formulæ submitted required modification to ensure an efficient dip.

Of twelve samples taken during the operation of dipping, seven were deficient in active ingredients. Of one hundred and four samples of approved dips purchased by the Board's Inspectors in different parts of the country, twelve differed from the formulæ previously submitted.

	1910	1911.
Percentage of Bath samples deficient in quality	38 ..	58
,, ,, samples purchased by inspector deficient in quality	18 ..	11

If the above figures represent what is being done throughout the country it is not surprising that scab has not been eradicated, and it explains the great dissatisfaction felt among Welsh and Scotch flockmasters.

In February, 1910, a meeting of farmers held at Talybont, Cardiganshire, presided over by Sir Edward Pryse, passed a resolution that compulsory dipping was a failure, and appointed a deputation to wait on the Assistant Secretary of the Board of Agriculture.

SOME APPROVED SHEEP DIPS.

In the Sheep-Scab Order of January, 1905, and in the Official Leaflet 61, March, 1905, three preparations of sheep-dip are mentioned as "approved," and as found by experiment to be suitable for use as sheep-dips without detriment to the fleeces of the animals dipped, and if properly employed, to be effective against sheep-scab.

1.—LIME AND SULPHUR.

Mix 25lbs. of Flowers of Sulphur with 12½lbs. of good quick-lime. Triturate the mixture with water until a smooth cream without lumps, is obtained. Transfer this to a boiler capable of boiling 20 gallons, bring the volume of the cream to 20 gallons by the addition of water, boil and stir during half an hour. The liquid should now be of a dark-red colour; if yellowish, continue the boiling until the dark-red colour is obtained, keeping the volume at 20 gallons. After the liquid has cooled, decant it from any small quantity of insoluble residue, and make up the volume to 100 gallons with water.

2.—CARBOLIC ACID AND SOFT SOAP.

Dissolve 5lbs. of good soft soap, with gentle warming, in 3 quarts of liquid carbolic acid (containing not less than 97 per cent. of real tar acid). Mix the liquid with enough water to make 100 gallons.

3.—TOBACCO AND SULPHUR.

Steep 35lbs. of finely-ground tobacco (offal tobacco) in 21 gallons of water for four days. Strain off the liquid, and remove the last portions of the extract by pressing the residual tobacco. Mix the whole extract, and to it add 10lbs. of Flowers of Sulphur. Stir the mixture well to secure an even admixture, and make up the total bulk to 100 gallons with water.

N.B.—The period of immersion in these dips should not be less than half a minute.

The above three dips were probably recommended as the result of the Madryn experiments, because the numerous proprietary dips subsequently placed on the approved Schedule could not have been sent up for examination until after January, 1905.

These three dips would require care in the preparation, in order to reach the required standard of quality, and though they could be prepared at home it would be quite impossible to have the respective mixings analysed each time before use, and consequently they are not likely to be employed under present regulations at public dipping centres.

It will be noticed that the lime with sulphur liquid dip takes the first place in the selection. It is curious, however, that the carbolic acid and soft soap mixture should take precedence of the tobacco and sulphur dip which had acquired a great reputation in the Colonies, though the sulphur being in the form of flowers of sulphur would be present in an insoluble condition when employed for dipping, and therefore would be less effective than sulphur rendered soluble in water by previous boiling with lime.

On this point Mr. W. B. Burgess, in the " Journal " of the Board of Agriculture, for August, 1911, referring to his experiments with lime-sulphur wash as a fungicide upon hops, says :—" This lime-sulphur wash would be much more efficient than flowers of sulphur for two reasons—(1) the former adheres very closely to the leaves, in fact cannot be removed by the most drastic washing ; (2) owing to its fine state of division the deposited sulphur would oxidise more quickly than flowers of sulphur, and thus prove a more powerful fungicide as its action probably depends on the formation of sulphur dioxide."

In the Board of Agriculture's Leaflet, 61, it is stated that none of the numerous arsenic preparations were included in this original approved schedule, not because the arsenic dips are non-effective against sheep-scab, but only because the preparation of such poisonous dips should be confined to qualified persons, and be used according to the printed instructions attached to the packets. In the same leaflet it is stated that " The Board at the same time recognise that there are a large number of sheep-dips on sale which may be regarded as equally effective against sheep-scab, and they have made arrangements for the examination of any samples which the manufacturers may submit to them for approval."

If, instead of all these approved dips, the farmer were made responsible for getting rid of scab he could employ any preparation he liked, and there would then be a perfectly open encouragement for manufacturers to offer the most effective preparation possible.

METHODS OF APPLYING DIPS.

When dipping is undertaken as a preventive measure, no doubt the modern swim bath is both the most economical as regards labour,

and quickest in regard to time, fewer men being required and more sheep being dipped in a day than by any other process. Where, however, scab actually exists and dipping is undertaken as a curative measure, the older and much smaller hand tub system must still be regarded as generally more effective, as it allows of the fleece being carefully handled and opened up so that the dip may be well applied to patches of scab.

The manufacturers of proprietary dips strongly insist upon the sheep being put in on its back and turned about in the bath so that the liquid may penetrate to all parts of the skin, and the time allowed should not be less than a minute. Total immersion is desirable because, in addition to the common scab (*Psoroptes communis*) which attacks the parts of the body where the wool is thickest, as the back and loins, there is a smaller species of mite (*Sarcoptes scabiei*) which affects the head and hairy portions of the face, causing head scab. There is also the foot mite (*Chorioptes communis*) with an elongated body and longer legs, which infests the legs below the knee, causing foot scab.

Makers of yellow sulphur and arsenic dips are very particular in their printed instructions to insist upon the dip liquid in the bath being frequently stirred up, in order that the flowers of sulphur, which constitute 60 to 65 per cent. of the yellow powder, should be thoroughly incorporated with the liquid.

The insolubility in water of the sulphur may be readily illustrated by placing some of the powder in a tumbler of water, and, after carefully mixing it, allowing it to stand, when it will be noticed that the yellow powder has sunk to the bottom. Unless, therefore, the bath liquid is constantly stirred during dipping, the sheep will not each get their proper share of the sulphur, the first getting less, and the last more, than their share. Further, much of the sulphur is wasted because as the fleece dries the sheep shakes off a large quantity of the powder, and only a comparatively small quantity sinks down through the crevices of the wool on to the skin.

It is curious that the printed instructions lay down that the arsenic should be rendered soluble by the addition of a sufficient quantity of water; but hitherto makers of this particular kind of dip have failed to recognise that the sulphur also, in order to be fully effective, should be rendered soluble in water. An ideal dip, however, such as the boiled sulphur and lime solution, when once diluted by the addition of warm water (the temperature being from 100°F. to 110°F.), needs no subsequent stirring, and each sheep gets its share of the effective sulphur, according to the size of the fleece. After careful pressure on the draining stand or tub, to remove

excess of liquid, the sheep passes to the gravel fold or yard, and as the moisture dries off the wool, the sulphur compound becomes deposited as a coating on the fibres of the fleece, not merely on the outside, but right down to the skin, and wherever the original solution has penetrated. It is not surprising that such a dip should, under careful supervision, have eradicated scab in New Zealand and the Australian Colonies.

In reply to an inquiry by the writer as to the dips officially required to be used in the United States, the following information has been received under date of October 5th, 1911, from the Chief of the Bureau of Animal Industry, Washington :—

"The four classes of substances permitted by the Department in the official dipping of sheep for scabies are:—(1) Lime and Sulphur; (2) Tobacco; (3) Creosote; (4) Cresol.

"In answer to your inquiry as to the efficiency of the permitted dips, it may be stated that Lime and Sulphur and Tobacco solutions are extensively used, and seem to be preferred by sheep owners and State live stock sanitary officials."

LOCAL DIPPING ARRANGEMENTS.

In this country the dipping arrangements are vested in the local authorities, the Chief Constable usually having executive control. As the respective Sheep-Dipping Orders are issued declaring certain districts scheduled as affected areas, special directions as to compulsory dipping within stated dates are prescribed.

Two dippings are required to be made by the owner of the sheep, with an interval of not less than ten and not more than twenty-one days, by a thorough immersion for about one minute in a sheep-dip approved by the Board. From inquiries made it would appear that the dips employed are proprietary ones, which are used according to the printed instructions by the makers.

The swim baths are usually used by large farmers, but for small farmers, hand tubs are preferred, as they and not the local authorities have to provide the baths. No return, however, is made to the Board as to the particular dip employed, which is to be regretted, as the tabulated returns would have afforded interesting information respecting the dips which were most popular with farmers. After compulsory dipping has been carried out to the satisfaction of the local official, the sheep may, after a certain time, be removed out of the scheduled area, but only by a license authorising such movement, and granted by an Inspector of the Board or of the Local Authority.

It will be evident that these restrictions against the movement of sheep out of a scheduled area cause considerable inconvenience as well as pecuniary loss to the farmer, owing to his inability to sell his sheep except for immediate slaughter on the spot. Therefore, it is essential that the best and most rapid, as well as the most complete remedial measures should always be adopted.

FUTURE ACTION IN REGARD TO SCAB.

It has been pointed out in this article that instead of restricting the selection of dips to one or two prescriptions which had worked satisfactorily in the Australian Colonies, the Board accepted the suggestion of the Departmental Committee and established an official schedule of "approved dips." This was unwise in principle, and six years' experience has proved it to have been unsuccessful in practice. It was an attempt to set up an imaginary standard of uniform effectiveness to be applicable to a great number of dips of very varying composition. Such an idea could not, of course, be realised. But apart from this idea of uniform effectiveness no means were provided for securing the public sale of identically the same quality of dip that had been approved. Nor was any arrangement provided for securing the strength of the dip applied being such as was specified in the printed instructions.

As already mentioned, 18 per cent. of the samples purchased by the Inspector in 1910, and 11 per cent. in 1911, were deficient in quality; and of the bath samples 38 per cent. in 1910, and 58 per cent. for the year ending 31st March, 1911, were found to be deficient in quality. It would appear that while the quality of the dip sold was getting nearer to that guaranteed, the strength of the bath solution actually used was getting very much weaker year by year.

These results tend to show why compulsory dipping, with all the elaborate Sheep-Scab Orders, have failed to eradicate scab, and it is high time that the whole matter should be reconsidered, with a view to the responsibility being placed upon the owner himself, who really has the greatest interest in keeping his flock healthy and in a saleable condition. It is not sufficient that notice of the existence of scab should be given, but the owner should at once have his sheep treated by an experienced dipper, and he should be heavily fined if the disease was not cured within a definite period. Mr. C. T. Sellens, a professional dipper, in his evidence before the Committee in 1903, stated that he had cured sheep within seven weeks by three dippings.

After being cured the sheep should be carefully examined by an

experienced veterinary surgeon, and certified as free from scab and fit to be moved, but in order to prevent fraudulent substitution of affected sheep in the place of those examined, it should be a penal offence to sell or offer for sale scabby sheep.

As regards the possibility of ready cure under proper treatment, let us see what veterinary authorities have said. The late Sir George Brown, for many years chief veterinary official of the Board of Agriculture, in an article on "Sheep-scab" in the September number of the 1895 "Journal of the Royal Agricultural Society," says:—"There can be no doubt that a large amount of money and time is wasted every year in the futile effort to cure the disease, which, nevertheless, can be proved to be quite amenable to treatment by skilled persons." Further on, he says: "There is a tendency to look upon the process of dipping, however imperfectly done, in the light of a charm which, in some mysterious way, is to save sheep from further harm, whereas it is quite easy to dip a diseased sheep in the regulation way, and leave a considerable portion of the scabby places untouched by the remedy."

Again, the late Professor Wortley Axe, writing in the "Journal of the Bath and West Society," Vol. IX., 1898-99, on the same subject, states: "Sheep-scab owes its large prevalence and persistence to the unpardonable indifference and neglect which a certain class of farmers and dealers display towards the animal affected by it," and he points out that: "No contagious disease is more capable of eradication than sheep-scab. It is curable by well-known agents which are always accessible, and by methods quite within the range of ordinary intelligence; while the knowledge of the life history, habits, and vitality of the parasite, renders prevention, for the most part, a mere matter of common precaution and care."

The above statements by recognised authorities fully confirm the necessity of seeing personally that not only is an effective dip used in the prescribed strength, but that it is carefully applied by experienced men who should be responsible for the effectiveness of the dipping, and be paid accordingly.

Of all farm animals sheep are the most subject to the attacks of parasites, such as lice, ticks, keds, maggots, and scab mites; so that every farmer should dip his sheep at least once a year, about a fortnight after being shorn, and if scab actually exists, a second dipping should follow after an interval of fourteen days. Any sheep noticed to be restless, to frequently break off feeding, to nibble its wool, first on one side, and then on the other, or to rub the body against any post, hurdle, or fixed object, should be at once carefully examined.

PRACTICAL VIEWS OF A LARGE FLOCKMASTER.

The late Sir Henry H. Scott, whose experience went back to 1858, and who had an interest in 16,000 sheep in Sutherland, Ross, Inverness-shire, Argyllshire, and Northumberland, gave most valuable evidence in 1903, before the Committee on Sheep Dipping, and as a member of the Committee signed a special report himself.

In his evidence he stated that he owned Leicester, Cheviot, and Blacked-faced sheep, and had found the following prescription an ideal dip for curing scab:—1lb flowers of sulphur, 1lb soft soap, 1 gallon of Fleming's tobacco juice (equal to 2 or 3 lbs. tobacco), and 20 gallons of water.

This should dip twenty sheep, and, if necessary, there should be a second dipping, which should be sufficient. When no dangerous scab existed in the neighbourhood he used a cheaper mixture of tar-acids, and sulphur; a proprietary dip.

In his Minority Report, he disagreed with the proposed establishment of a schedule of approved dips, regarding the provisions of Paragraph 34 as intricate and unnecessary. He proposed that the provisions which had worked so satisfactorily in the Colonies should be followed, and that the annual dipping in an effective dip should be brought about by making the owner responsible for keeping his sheep free from scab. The owner should (under penalty of a fine for omission) give immediate notice to the nearest policeman of the outbreak of scab on his farm and an Inspector appointed by the Board of Agriculture for each county or group of counties should visit the farm and declare it an infected area. If the sheep were not cured within 40 days the owner should be liable to be fined, and further fined for each 40 days the sheep remained uncured. The farmer should select and provide the dip and the baths as well as the men for applying same.

According to this practical and simple scheme only the guilty would be harassed or troubled. In no wise should the responsibility of the owner be shared with that of the Board of Agriculture; the effect of such a mixed liability would be, that if there was death after dipping, or if the scab was not cured, the owner of the sheep would say "I have done as the Board instructed me and the blame is that of the Board and not mine." This complaint has been frequently heard of late in Scotland and Wales, thus fully confirming the opinion of Sir Henry Scott, who signed a minority report because he had long experience in the successful management of sheep and knew exactly what was required to be done.

CONCLUSION.

The writer has endeavoured to explain, with the aid of facts and figures, why compulsory dipping, in approved dips, within scheduled areas, and under official regulations, has failed to eradicate sheep-scab in Great Britain, or even to have produced any amelioration of the disease in Ireland; and he has briefly indicated the direction and the lines upon which future action should be taken.

In conclusion he would point out that it was not merely compulsory dipping in a specially authorised dip, that conduced to the speedy and complete eradication of scab in Australia and New Zealand, but rather that the owner was made personally responsible, under heavy penalties, first to notify the existence of scab in his flock immediately it was discovered. and, secondly, to get rid of it within a definite period.

If sheep-scab is ever to be eradicated from this country it will have to be done by the adoption of similar means.

III.—THE PROBLEM OF PLANT SENSATION.

By S. Leonard Bastin.

During the last few years there has been a remarkable change in the attitude of the botanical student towards his special subject. Not so long ago it was the custom to regard the whole of the vegetable kingdom as something much inferior to the animal world. The text books taught us that plants were just living machines, going through their lives with little or no deviation from a certain course. In the twentieth century this idea has been once and for all abandoned. Nowadays the plant is regarded as a living being, closely in sympathy with its surroundings, and acting in response to innumerable stimuli. It is often noticed that, when peculiar circumstances arise in the life of an individual plant; the latter almost at once adjusts itself thereto in a manner which suggests a perfect appreciation of the new conditions. As no vitalised automaton could possibly behave in this way one is forced to the conclusion that the plant must, at least to a certain extent, be able to feel. In this way is opened up one of the most fascinating problems of modern times.

WHAT IS FEELING.

In order to arrive at a proper understanding of the subject of plant sensation, it is important to form an idea of what we really mean

by feeling. If we reduce the conception to its simplest possible form we shall find that the ability to feel merely indicates the power to respond to a stimulus. The iris of the human eye is so sensitive that it responds almost instantly to the action of light. As is well known, this membranous curtain closes in round the pupil of the eye when there is a strong illumination, whilst under the influence of very feeble rays the protecting layer is drawn back. A very simple experiment will convince anyone that plants can feel the light. Place a normally grown plant in such a position that the illumination will only reach it from one side. In a very short space of time the bearing of the plant is changed; its natural habit disappears and the upright stem gives place to one which leans over to the side most exposed to the stimulating rays. That this sensitiveness to light was of a highly specialised nature was proved by Darwin. Young plants of *Phalaris*, a kind of grass, became curved towards a distant lamp. This in spite of the fact that the light given out was so slight that a pencil held close to the plants did not cast any shadow, even on a white ground.

THE VARIED RESPONSE OF THE PLANT TO LIGHT.

In a natural way plants are continually responding to the action of light. Many climbing plants are excellent illustrations of the manner in which the position of the foliage is modified in order that it may secure a good illumination. If a plant of Ivy (Fig. 1) is examined it will be seen that every leaf faces outwards towards the light, although this may bring about a good deal of distortion on the part of the stalk. As light plays an important part in the life of the green plant it is easy to understand why it is of great advantage to most plants to expose their leaves in such a way that the greatest amount of light is secured. We may take it then that positive heliotropism, or a definite tendency towards the light, is the rule in the case of most growing plants. But there are quite a number of exceptions. The roots of plants exhibit a marked inclination to get away from the light by plunging into the soil, but in some cases, even the organs above ground show a tendency to bend away from the light. Thus the young shoots of the Ivy (Fig. 2) always lean away from the direction whence the illumination is coming. This causes the stem to lie closely up to the tree trunk or wall against which the plant is climbing, so that it only needs the production of the clinging roots to bring about a permanent fixture. The tendrils of the vine and the Virginian creeper (Fig. 3) are also negatively heliotropic. If closely watched, it will

be seen that these processes always avoid the brightly illuminated parts and deliberately seek out the shady corners. This is all the more strange when it is remembered that tendrils are in origin modified leaf shoots, parts of the plant which in the ordinary way would not be likely to turn away from the light. It is, of course, quite clear that these organs are much more likely to secure a hold in the dark cracks and crevices than they would if they grew out towards the light. More perplexing still is the behaviour of the flower stalks of the Ivy-Leaved Toad Flax (*Linaria cymbalaria*), a familiar plant which lives chiefly on old walls. At first the stems bend towards the light, but when the blossoms have been fertilised, and there is a prospect of the seed setting, the stalks turn inwards towards the wall. In this way we may say that the little toad-flax really plants its own seeds in the crevices of the structure on which it is growing. It is really very difficult to explain the light-seeking and light-avoiding movements of plants. It may be thought that, as light exerts a somewhat retarding influence on growth, the side of the plant which is shaded grows more quickly than that which is illuminated, and the specimen bends towards the light. But this leaves us without the least explanation of the causes which go to make a plant avoid the light in some of its parts. Even at this early stage in the consideration of the subject one is forced to the conclusion that it will not suffice to think of the plant in all its actions as a mere mechanical system.

THE SLEEP OF PLANTS.

The most indifferent observer must have noticed that many plants undergo certain changes in their bearing as the light of day wanes. This phenomenon is much more common than is generally supposed, and it is likely that there are few plants which do not evidence some modification in the manner of holding their leaves after sunset. These movements are much more marked in some cases than in others, and of all plants, those belonging to the great pea tribe are the most distinctive in this direction. All the clovers, the garden Lupins and Acacias, are transformed in appearance during the night time so that one would scarcely know them for the same plants. The leaflets, which during the day have been fully expanded, are at night closely folded so that one can well understand the great Linnaeus talking of the sleep of plants. It is now known that the change in the bearing of the plants cannot really be compared to the taking of rest which is such a well pronounced incident in the daily life of the animal. Once and for all

Darwin proved that the change was really a protective measure. He fastened the leaflets of clover plants in such a way that they could not close together and exposed the specimens to an ordinary night temperature. In the morning all the leaves so treated were shrivelled up and ultimately died. There is little doubt that the foliage died of exposure, due to the fact that the evaporation of vital heat proceeded at too great a rate from the fully expanded surfaces. The accompanying illustrations show the night and day attitude of the Telegraph Plant (*Desmodium-gyrans*) (Fig. 4), an Indian leguminous species which exhibits the sleep movements to a very pronounced extent. The day and night positions of the common Wood Sorrel (Fig. 5) are also effectively indicated. This little plant strongly resembles many of the clovers in its behaviour, although it is not even remotely related to the leguminous tribe. The night movements in plants are not by any means confined to the foliage. A very large number of flowers close their petals towards the end of the day, and in some cases even the head of the blossoms droops downwards. Again we may claim that the object of this change in bearing is quite obvious. The low temperature and heavy dews of the night are full of danger to the delicate pollen of the flower, and it is essential that this should be protected. How effectually this is accomplished is well seen in the case of the Water Lily (Fig. 6), where, with the declining of the sun, the snowy petals are gathered together over the mass of golden anthers. The immediate result is to bring about a sinking of the flower head, so that it is partially covered by the temperate waters of the lake. This is only one instance out of thousands which might be given from the floral world to show that special preparations are made by the flower to meet the conditions which come with the night.

THE CAUSES WHICH BRING ABOUT THE SLEEP MOVEMENTS.

There can be little doubt that the daily alternation of light and darkness has a great deal to do with the so-called sleep movements of plants. One can hardly go so far, however, as to say that it is the failure of the light which is the direct cause of the plant assuming its night position. After many observations Darwin showed that, in the case of some plants, if the leaves had not been brightly illuminated during the day, little or no change came about with the approach of absolute darkness. Thus we may infer that it is the *difference* in the amount of light, which, so to speak, gives the signal for the closing of the petals and the gathering together of the leaves. The question of temperature appears to be on a somewhat

different basis. Cold really does seem to induce in a direct manner somewhat similar changes to those which are associated with the sleep of plants. On a day when the wind is cold, the flowers of many plants do not open even if the sun is bright, until the temperature has been brought up to a certain point. The Telegraph Plant, already mentioned, will assume its sleep position in a low temperature, whilst even the Wood Sorrel closes its leaflets under the influence of a cold gust of air.

In considering the inducing cause of the sleep of plants, it is most important to remember the part which temperature will play in bringing about the leaf movements, and it is quite likely that, more often than not, cold is a contributing cause of the daily change. If the question of temperature is eliminated altogether one is bound to admit that the folding of the leaves, and possibly the closing of the petals, is largely due to an inherited tendency on the part of the plant. Although the coming of day and night acts as some sort of a stimulus to the plant, the actual changes have become more matters of habit than anything else. It is easy for anyone to prove this. A young French Bean plant, in a healthy condition, may be placed in a darkened chamber, and kept there for some days. Just about the hour of sunset the foliage of this plant will droop in the approved fashion, whilst in the morning the expansion of the leaflets will take place. It is these remarkable changes which have led Professor Francis Darwin to state that in his opinion it is possible to trace something in a plant which is closely akin to memory. He declares that we may say that the cells of the bean plant "remember" the changes which come at certain periods of the day so clearly that they are able to bring about these alterations even though they are no longer in touch with normal surroundings. After several days these movements become less pronounced, and finally the specimen becomes very erratic in its behaviour, closing and expanding its leaves in a manner which shows small connection with anything. Here again it is very clear that the plant is not a machine which simply acts in response to a certain set of stimuli. One feels to be more than ever brought into touch with the plant as a living being.

SPECIAL DEVELOPMENTS OF PLANT MOVEMENT.

Apart from the cases of plant sensation, to which reference has already been made, there are a certain number of instances of special interest. There must be few people who are not familiar with the Sensitive Plant (*Mimosa pudica*) (Fig. 7), whose leaves respond to the slightest touch. Perhaps the most remarkable feature in the

case of this species is that the shock is transferred from one part of the plant to another. Thus, if two or three leaflets are smartly tapped, the adjoining leaflets begin to close together, next the whole organ collapses, then all the leaves on that particular branch droop, and finally the entire plant may be involved. The immediate cause of this change in the bearing of the leaves is due to alterations in the distribution of the water in the cells of the foliage. We can trace the depression of the leaf stalk to a little cushion-like swelling at its base, which is called the pulvinus. This contains a woody centre surrounded by a mass of spongy cells, rich in water. When the plant receives a shock it seems that this is transmitted to the pulvinus, the result being that the water in the lower part of the process passes into the upper portion. The immediate outcome of this is that the cells which have hitherto been stiff enough to support the stalk, are now quite flabby, and as a consequence the whole leaf falls down. The Sensitive Plant is very much affected otherwise than by actual contact. Thus, when submitted to the fumes of an anæsthetic, the plant droops its foliage in a most dejected fashion, whilst an electric current visibly affects the position of the leaves. The writer observed that even a thunderstorm will bring about an alteration in the bearing of the foliage of the Sensitive Plant. Of course the Mimosa illustrates all the features of a sleep movement, and whilst one can understand that this is an advantage from a protective point of view, it is not easy to trace any real purpose in the astonishing sensibility which has been already mentioned. Darwin supposed that the extraordinary movements were an exaggerated form of the sleep movement, though he was quite at a loss to explain their utility. Present day scientists are equally baffled by the curious behaviour of the Sensitive Plant. The Telegraph Plant has already been mentioned in connection with its sleep movements, but it has a still more singular side to its nature. The leaves of the plant are divided into three leaflets, a large central one and two rudimentary organs, small processes which are, perhaps, the most strange pieces of vegetation in the world. Now, the singular part about these leaflets is, that they are nearly always in motion, their tips describing a rough elliptical course in a strange jerking fashion. The movement has been compared not inaptly to that of the second hand of a watch, and its rapidity is largely dependant upon the weather conditions. On a warm, humid day, or under the influence of bright sunshine, the jerks proceed at a rapid pace, and as many as sixty have been counted in a minute. There is no doubt that the large central leaflet also moves, although more

slowly, inclining itself first to the right and then to the left. This may be observed by a reference to the two accompanying photographs, showing the leaf of the Telegraph Plant. (Fig. 8.) Nowadays, it is possible, in most of our botanical collections, to see specimens of this most singular plant, whose movements present to us an entirely unexplained problem.

PURPOSEFUL MOVEMENTS ON THE PART OF INSECTIVOROUS PLANTS.

It is well known that a considerable number of plants have acquired the habit of capturing insects as an additional source of nitrogenous material. Some of the methods employed are very strange, and involve the development of special contrivances, which have for long been the wonder of the world. The power of the plant to respond to stimuli has been turned to good account by these fly-catching species, and we shall find some very singular cases of sensation among the members of this interesting group. Our British Sundews (*Drosera*) would attract a great deal more attention if they were larger, for there are not many plants whose powers of feeling have been developed to such an extent. An examination of a Sundew leaf will show that it is covered with club-shaped hairs, which produce at their tips a sticky secretion. Should a fly or other insect chance to alight upon the Sundew leaf, a greatly increased discharge of the sticky solution takes place, whilst at the same time the hairs curve in over the creature. From all parts of the leaf the hairs bend towards the intruding object, in some cases even pulling the floor (from which they arise) out of its normal shape. It would really seem that these hairs are able to feel objects at a distance, a curious faculty which will be seen at a later stage to be illustrated in other parts of the plant. Experiments have been carried out with a Sundew leaf and a fly, the insect having been fastened at a distance of a quarter of an inch from the plant. In one case the leaf moved perceptibly nearer to the insect, whilst in another instance it is declared that the leaf of the plant actually secured its victim. Although both these cases seem to be well authenticated, it is difficult to say how much of the movement might not have been due to those changes in position which are always taking place in the growing leaf. Still, there is little doubt that the tentacles possess wonderful powers, and it is impossible to say that they could not be responsible for the pulling over of the whole leaf towards the fly. Another singular fact, which anyone can prove, is, that the Sundew leaf can in some way distinguish between an insect and a useless object, such as a tiny

pebble. If, for instance, a grain of sand is placed amongst the tentacles, a great increase in the glandular secretion takes place, but there is no movement on the part of the clubbed hairs. Similarly a spot of rain falling smartly on the leaf does not produce the slightest response on the part of the tentacles, although the shock is a considerable one. In an accompanying illustration is shown an example of the Cape Sundew (*Drosera capensis*) (Fig. 9), a plant which is a good deal larger than our native species.

The Venus Fly Trap (*Dionaea muscipula*) (Fig. 10), a native of the swamps of Carolina, in some ways is even more remarkable a plant than any of the Sundews. The foliage of this plant, which is spread out in a rough circle close to the soil, is of a very curious formation. Each leaf is really divided into two parts, the one a long foliaceous stalk, and the other a broad, nearly circular, process. This latter is formed into two plates which are joined together by a mid-rib fashioned like a hinge. The edges of these plates are adorned with fringes of stiff bristles, and the upper surface of each plate bears three hairs arranged in triangular fashion. The whole forms a most perfect little trap, skilfully baited with a sweet secretion which exudes from the surface of the blades. This substance seems to be peculiarly attractive to flies, and the plant does not have to wait long for its prey. The only sensitive part of the little trap are the three hairs already mentioned, but should the insect happen to brush up against one of these, as it almost certainly will when feasting on the secretion, the result is disastrous to the fly. The trap-like arrangement closes sharply on its hinges, the fringes of bristles surrounding the blades interlock, and the victim is made a prisoner beyond any hope of escape. The violent struggles of the fly only seem to increase the hold of the plant, and the leaf does not open until the nutritive parts of the insect are absorbed and nothing remains but the hard, indigestible portions. The Venus Fly Trap is almost uncanny in its ingenuity in distinguishing between what is good for its purpose and what is not. During the last few years the writer has carried out many experiments in connection with this plant, and a few of them may be briefly outlined. A tiny fragment of stone was placed between the blades of a Dionaea leaf, and the organ, doubtless under the impression that it was a useful catch, closed up promptly. An hour or so later the leaf opened, and the stone was permitted to fall away. It does not take very long for the leaf to realise that its capture is a piece of useless material. In a general way the Dionaea is quite ready to make use of raw meat, and will retain a portion until, as in the case of a fly, all the nutriment has been absorbed.

Fig. 1.—The Leaves of the Climbing Ivy always turn and face the Light.

Fig. 2. Young Ivy Shoots grow away from the Light.

Fig. 3 The Tendrils of the Virginian Creeper turn away from the Light

Fig. 1 The Telegraph Plant

(Day Position) (Night Position)

Fig. 5. Wood Sorrel awake and asleep

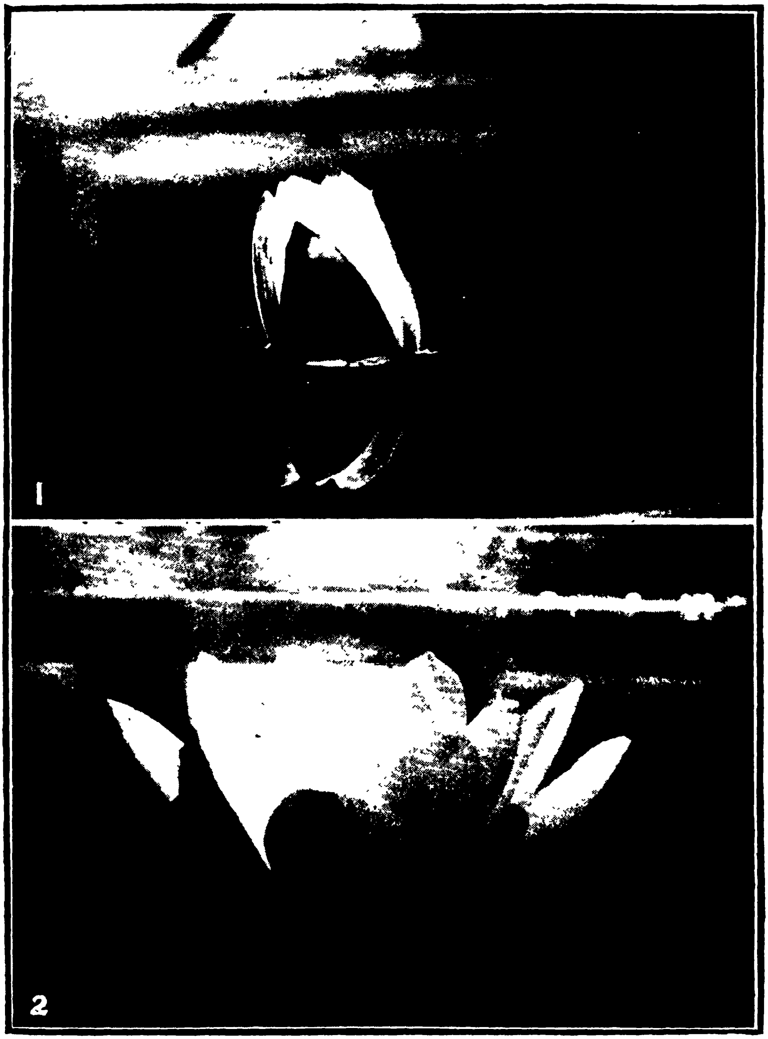


Fig. 6. During the cold hours of the night the Water Lily closes its petals, but these are fully expanded soon after sunrise.

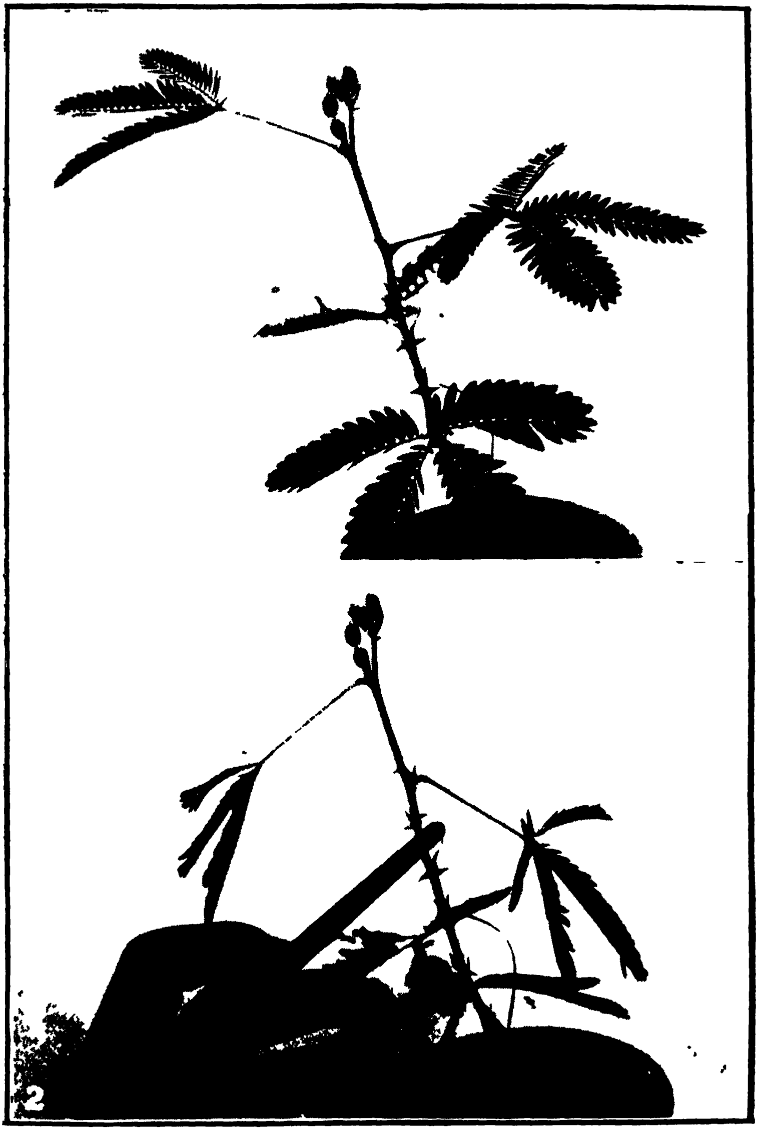


Fig. 7. The Sensitive Plant responds at once to a tap on its stem.

Fig 8 THE LEAF MOVEMENTS OF THE TELEGRAPH PLANT

The second photograph was taken about a tenth of a minute after the first

Fig. 9. The Cape Sundew: an interesting fly-catching plant

Fig. 10. Venus Fly Trap

FIG. 11.—1.—HAZEL BUSH GROWING IN OLD WILLOW. 2.—NEAR VIEW SHOWING HOW THE HAZEL ROOTS HAVE REACHED THE GROUND.

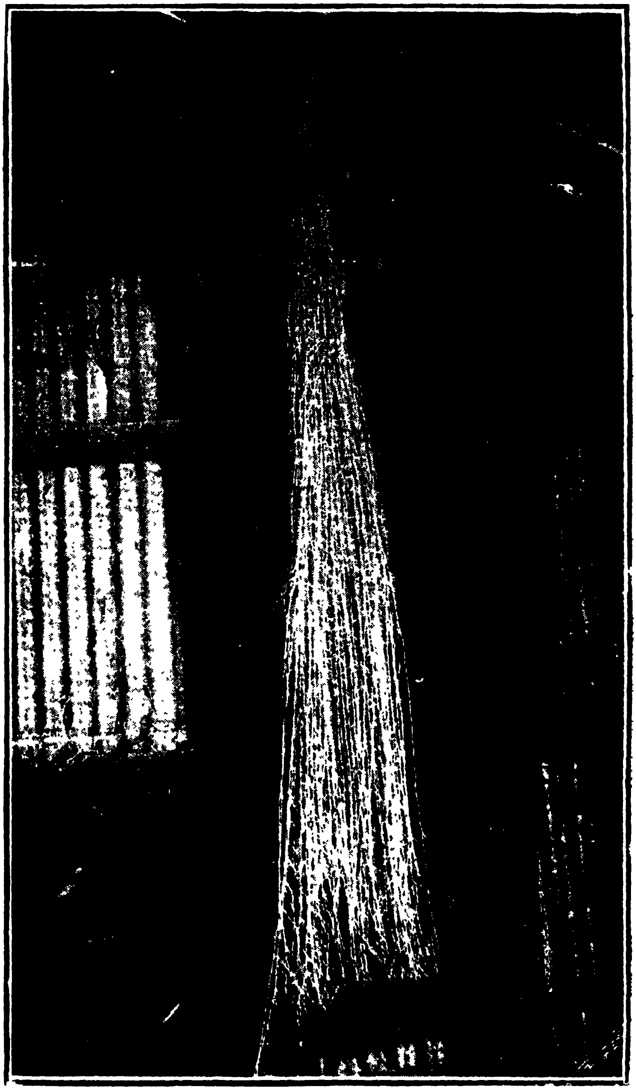


Fig. 12. A climbing species of Cactus sent down its roots to the ground through a hole in the shed roof.

A small piece of rather hard meat was given to the plant, and this was seized in the usual way. The material was released in quite a short time, however, the Dionaea evidently feeling that the particular fragment was too tough to be digested. The same piece was offered several times and accepted for a while, but it was never retained for any long period. After a close study of the Dionaea in all its ways, it is difficult to avoid the conclusion that in this plant we have a development of sensation which gives to the species something resembling the power to reason.

THE UNDERGROUND ORGANS OF PLANTS.

To the ordinary observer the roots of a plant do not seem to call for special attention. Yet those who take the trouble to study the underground organs of vegetation will find abundant scope for research. A large number of the things which the roots of plants are continually in the habit of doing we cannot understand in the least, while in other cases we can only form the vaguest notion of how the phenomena are brought about. Of course certain points which puzzled the early naturalists are now quite clear, and there is no longer any need to make mysteries of them. It is often seen that a plant in a dry soil will send out its roots to a moister one, or a specimen in a pot will project its roots through the hole in the bottom into water in a pan, or possibly towards the moist earth with which the receptacle may be surrounded. These instances present no difficulties when it is realised that the additions to the extremities of the roots almost always take place along the line of least resistance. The roots cannot well make a headway through hard, dry soil, whilst it is quite easy for them to pass through the earth which has been loosened by a flow of water. More remarkable, but still easy to understand, is the fairly frequent occurrence in which a tree on one side of a road sends out its roots to a stream on the other side—these roots dipping beneath the hard bed of the road and rising again the other side. There is little doubt that the water from the stream drains through the softer material beneath the foundations of the road, and in this way prepares an easy course for the roots to extend along. But the observer is continually being confronted with instances which give strong grounds for supposing that, in their roots, plants possess a kind of selective instinct. It may be wholly ridiculous to suggest that plants are capable of intelligent operations, yet it must be admitted that some of the following cases appear to be the outcome of instinctive action.

THE STRANGE BEHAVIOUR OF ROOTS.

In his work on Vegetable Physiology, the late Dr. Carpenter has given us a remarkable instance of the tendency shown by roots to grow in the right direction. This authority gives us such a graphic account of the circumstances that it is worth repeating. He says :—

> "In a little hollow on the top of an old oak (the outer layers of which, however, and the branches are still vegetating), the seed of a Wild Service Tree was accidentally sown. It grew there for some time, supported, as it would appear, in the mould formed by the decay of the trunk on which it had sprouted; but this being insufficient, it has sent down a large bundle of roots to the ground, within the shell of the oak. These roots, which have now increased in size, do not sub-divide until they nearly reach the ground, when they look like so many small trunks. In the soil, however, towards which they directed themselves, there was a large stone about a foot square, and had their direction remained unchanged, they would have grown down upon this. But about half a yard above the ground they divide, part going to one side and part to the other, and one of them branches into a fork, of which one leg accompanies one bundle and one the other; so that on reaching the ground they enclose the stone between them and penetrate on two sides of it."

It is surely very difficult to explain the manner in which the roots of the Wild Service Tree became aware of the obstruction eighteen inches before they were in contact. Two somewhat similar cases of root activity have recently come under the notice of the writer, both of which it is possible to illustrate owing to the kindness of the observers (Fig. 11). In the first place, the author is indebted to Mr. William Todd, of Staines, for the photographs, showing the young hazel bush which has become established in the upper part of an old willow tree. During the last few years the decaying vegetable matter at the top of the trunk has proved insufficient for the needs of the hazel, and the bush has sent down its roots straight to the ground beneath, travelling a distance of about 12 feet. In the other case, Mr. C. Pym, of Cape Town, has very kindly sent particulars of a most singular case of root development on the part of a Cactus. (Fig. 12.) This plant, which happened to be one of the trailing kinds, was rambling over the roof of a shed. It may be mentioned that it is the habit of these species to send out roots at intervals from their stems whenever they come into contact with any soil. At one

point in the roof of the shed already mentioned there happened to be a fair sized hole. Strangely enough, on reaching this opening the Cactus sent down a thick cluster of roots to the ground beneath, a distance of about eight feet. As it happened, very few of the roots were destined to reach the soil, seeing that the shed was infested with rats, and these creatures gnawed away the growing shoots for a distance of several inches upwards. We may indeed search the text books in vain for any explanation of cases such as these in which the roots of two plants, embarked on a long journey through the air, directed their growth with unerring accuracy to the place where they could secure a footing. Certain it is, that in some way of which we can have little understanding, roots are able to feel things at a distance, and adjust their growth according to the special conditions.

The foregoing instances bearing on the subject of plant sensation are only a very few out of a large number which have been observed during the last five or six years. It has been said that one would hesitate to grant an intelligence to the members of the vegetable kingdom, and yet, as the subject is studied, it is impossible to deny that plants possess powers which we can scarcely understand at all. In some way too, which it is not easy to explain, they appear to be conscious of their surroundings and to modify their behaviour accordingly. Here surely is a vast and an attractive field for those who, whilst disliking the dry botanical treatise, love to study the living and feeling plant. Personally, the writer intends to devote as much time as possible to the investigation of this fascinating subject, and he would be only too delighted to correspond with anyone who has come across cases in the life of the plant which it seems difficult to explain as mere responses to stimuli.

IV.—MILKING SHORTHORNS.

By R. H. Evans, B.Sc., Assistant Director, Department of Agriculture, University College, Reading.

The Shorthorn breed of cattle, considered from the standpoint of milk-production, may be divided into three classes :—

(*a*) Pedigree Dairy Shorthorns (Coates's Herd Book) ;
(*b*) Lincolnshire Red Shorthorns ;
(*c*) Non-pedigree Shorthorns.

I.—The Early Shorthorn.

The above sub-breeds are descended from the Dutch cattle imported into this country many years ago, which claimed the attention of several writers on Agricultural subjects towards the end of the seventeenth and the beginning of the eighteenth centuries. The Dutch animal, even at that early period, was considered an excellent milker. Mortimer, in his treatise on the "Whole Art of Husbandry," published in 1716, writes : "But the best sort of Cows for the Pail, only they are tender and need very good keeping, are the long-legg'd shorthorn'd Cow of the Dutch-breed, which is to be had in some Places of Lincolnshire, but most used in Kent : many of these Cows will give two Gallons of Milk at a Meal." The yield of "two Gallons of Milk at a Meal" seems small when compared with the 3 or 3½ gallons which the modern Shorthorn sometimes gives, but it should be remembered that the animal in Mortimer's time had not the attention and keep which its present descendant enjoys. "Very good keeping," in the beginning of the eighteenth century, would probably mean good pasturage in summer, and a little hay or straw in addition to what the animals could pick up out of doors during the winter. Under such conditions, to which should be added the lack of artificial shelter, a yield of two gallons at a meal seems to point to the excellence of the animal as a milk producer from the earliest times.

At the beginning of the nineteenth century, Culley refers to the breed as the Short-horned or Dutch-kind, and thus describes the animal :—"They differ from the other breeds in the shortness of their horns, and in being wider and thicker in their form or mould, consequently feed to the most weight : in affording by much the greatest quantity of tallow when fattened : in having very thin hides, and much less hair upon them than any other breed (Alderneys

excepted): but the most essential difference consists in the quantity of milk they give beyond any other breed: the great quantity of milk, thinness of their hides and little hair, is probably the reason why they are tenderer than the other kinds, Alderneys excepted." Such then was the Short-horned or Dutch cow as known to Culley at the beginning of the nineteenth century.

In a footnote on page 40 of the fourth edition of Culley's book on Live Stock, where he is treating of Shorthorns, it is stated that:—"There are instances of cows giving 36 quarts of milk per day, and of 48 firkins of butter being made from a dairy of 12 cows: but the more general quantity is 3 firkins per cow in a season, and 24 quarts of milk per day." A firkin of butter weighs 56 lbs. These figures most probably have reference to the performance over the pail, and in the dairy, of picked cows, while 24 quarts a day must mean the average yield per day during the first few weeks after calving. If Culley's figures are correct—and there is no reason to doubt them, the Shorthorn of a century ago, so far as her milking qualities were concerned, bears comparison with the best milkers of the present day.

In Mortimer's time—and for a considerable period afterwards—the Longhorn breed held sway over most of the Midland Counties of England. Its influence reached as far south as the Thames, as far west as the territories of the Hereford and the Welsh, and as far north as Westmoreland and Cumberland, whilst the Craven district of Yorkshire is closely connected with the early history of the breed. The popularity of the Longhorn at this period afforded the Shorthorn very little opportunity of making known its fine qualities. Eventually, however, the latter pushed its way along the valleys to the east of the Pennine Chain, and even penetrated into Scotland, where it is supposed to have transmitted its milking properties to the Ayrshires.

As to the colours of the Dutch-Shorthorned breed, Culley writes that they were "much varied; but the generality are red and white mixed, or what the breeders call 'flecked'; when properly mixed, a very pleasing and agreeable colour." Lawrence in the "New Farmer's Calendar," published in 1801, says, when treating of "butter-cows," that the best cow he ever had was a "spotted, finch-backed one," bred in Kent. As it is on record that a great many of the Dutch cattle found their way into Kent, this cow of Lawrence's was probably a Shorthorn.

From the evidence of these early writers we can picture the Shorthorn of the eighteenth century as a long-legged, shorthorned animal: a good milker, and noted among cattle for its power to

put on tallow: its colours were various, but mostly red, white, and a mixture of the two (roan). Such then was the animal from which the Shorthorn is descended, and it will prove of interest to note the changes the breed has undergone during the last 100 or 120 years.

II.—THE IMPROVEMENT OF THE DUTCH-BREED.

That the owners of Shorthorn herds, even before the time of the brothers Robert and Charles Collings, were alive to the need of improving their stock, seems apparent from the fact mentioned by Culley, that a "gentleman of the County of Durham (Mr. Michael Dobinson), went in the early part of his life into Holland in order to buy bulls: those he brought over were of much service in improving the breed: and this Mr. Dobinson and neighbours, even in my day, were noted for having the best breed of Shorthorned cattle, and sold their bulls and heifers for very great prices." There seems, therefore, very little doubt but that the breed were not only of Dutch origin, but were further improved in this country by the introduction of Dutch bulls. From Dobinson's time onward, Tees-dale became the nursery of the best specimens of the breed. The names applied to the breed in different districts, during the last two centures, are various, among the more important being Dutch, Shorthorned, Yorkshire, Holderness, and Teeswater. The improvement of the breed which Mr. Dobinson began was taken in hand by Mr. Maynard, the brothers Charles and Robert Collings, Mr. Booth, Mr. Bates, and many others. The improvement was carried on from among existing herds, and there seems to be no evidence of any further importation of Dutch bulls.

It is probable that most of the early improvers of the Shorthorns bred more for beef than for milk. It is doubtful whether any of them considered milk-production of more importance than beef-production. They aimed more at getting an animal with as "little light" under it as possible, and with thick flesh of good quality.

III.—VARIOUS VIEWS AS TO HOW BEST TO IMPROVE THE EARLY SHORTHORN.

There seems to have existed among the early authorities on breeding, divergent views as to whether it were possible to improve the beef-producing characteristics of the animal, without at the same time impairing its milk-giving capacity, and *vice-versa*.

Sir John Sinclair, writing in 1802 on this subject, remarks:

"Whether a particular breed ought to be kept up for that sole purpose (milk production), or whether it is preferable to have stock partly calculated for the butcher and partly for the dairy, is a point well entitled to the most deliberate discussion. It is probable that, by great attention, a breed might be reared, the males of which might be well calculated, in every respect, for the shambles," (*i.e.*, the beef-market), "and the females that might, when young, produce abundant quantities of milk, yet, when they reached eight or nine years of age, be easily fattened. This would be the most valuable breed that could be propagated in any country, and, indeed, some of the best English and Scotch breeds have almost reached that point of perfection." In these sentences we find Sir John Sinclair's idea of what a cow should be—a good milker when young, a producer of stock "well calculated for the shambles," and a good fattener, when the animal is no longer kept for milking purposes.

Lawrence, in his book "The New Farmer's Calendar," already referred to, when treating of Milch Cows, writes as follows:— "Great milkers are seldom handsome, but of a gaunt and meagre appearance: nevertheless, I have seen some thorough-shaped, although they never carried much flesh, whilst in milk. It is not within the scheme of nature to give absolute perfection, for we never need to find cows, both capital milkers, and extremely apt to fatten: but many such will take on a great burden of fat in length of time." Lawrence evidently was not a great advocate of breeding for both milk and beef at the same time.

Culley—the Fourth Edition of whose "Observations on Live Stock" was published in 1807—held much more decided views on this matter than Lawrence. "I apprehend," he writes "one great mistake that breeders in general have run into, especially in breeding neat cattle, has been, endeavouring to unite great milkers with quick feeders. I am inclined to think this cannot be done, for, wherever we attempt both, we are sure to get neither in any perfection: in proportion as we gain the one in the same proportion we lose the other: the more milk the less beef, and the more we pursue beef, the less milk we get . . . . . if the dairyman wants milk let him pursue the milking tribe: let him have both cows and bulls of the best and greatest milking families he can find."

Enough has been quoted to prove the difference of opinion on this point at the beginning of the nineteenth century. By far the more ideal animal was that depicted by Sir John Sinclair, but for the raising up of a breed to a certain standard, in the shortest possible period, Culley's method was by far the more practical.

Since beef-production was at this time of much more importance than milk-production, most of the early improvers naturally bred for beef. It is hardly correct, perhaps, to say that the milking qualities of the animals were entirely ignored, but there seems to be no evidence of any breeder of repute having bred for milk and that alone. However, the milking qualities of the original stock seem to have been so dominant, that in spite of the animals being bred for beef-production, these qualities were well maintained.

Mr. James Sinclair, in his interesting work on the "History of Shorthorn Cattle," writes as follows:—"The inherent capacity of the Shorthorn for milk is very great, and deep milkers have been often known in herds whose owners never bred for milk, but chiefly for flesh and form. In Mr. Richard Booth's herd at Warlaby, there were good milkers, though the wealth of flesh of that herd was quite exceptional." The same author further remarks:—"There were several breeders of high repute in early and more recent times who rather boasted of the milking powers of some of their cows, which, improved as they were in shape, retained their milking properties. Among these was Mr. Thomas Bates." It seems, therefore, that although these early improvers were alive to the difficulty of improving their cattle at the same time for both milk and beef, there is no evidence of any of them having at any time aimed at improving for beef at the expense of milk. Also, when the beef-producing properties had been greatly improved, it is clear that many owners were very pleased to find that their animals still retained to a great extent their milking qualities.

IV.—THE DAIRY SHORTHORN (COATES'S HERD BOOK).

The advance in the price of milk has brought that commodity to be of equal importance, if not of greater, than the production of beef. This led the owners of those herds which are descended from good milking strains, to form themselves in 1905 into a society known as "The Dairy Shorthorn (Coates's Herd Book) Association."

The members of this society have already proved their cattle to be excellent dual purpose animals. It remains to be seen how far the improvement for milk can be pursued without impairing the beef-producing properties of the pedigree Shorthorn. So far as the three most important things looked for in an ideal milker are concerned,—milk-yielding capacity when young; the producing of stock that graze well; and the power of putting on flesh when no longer required for milk—the pedigree milking Shorthorn probably has no rival.

The performance of pedigree Shorthorns at various Shows has amply justified the formation of the Dairy Shorthorn Association. The following table shows the performance of these animals at the London Dairy Show since 1905 :—

PEDIGREE SHORTHORNS AT THE LONDON DAIRY SHOW, 1905—1910.

Year.	No. of Cows Tested.	Average Age.	Av. No. of Days in Milk.	Average Amount of Milk.	Average Fat.	Average Solids Not Fat.	Total Solids.	Points
		Y. M. W.		lbs.	%	%	%	
1905	8	..	..	46·3	3·4	9·07	12·47	92.10
1906	11	..	..	46.7	3.36	8.93	12·29	88·00
1907	17	7 2 2	56	47·9	3·56	8·95	12·51	94·60
1908	15	7 1 1	74	48·3	3·57	9·01	12·58	99·50
1909	19	7 6 0	56	45·3	3·85	8·89	12·74	97·50
1910	11	7 3 2	66	50·0	4·01	9·05	13·06	109·50

While there seems to be no distinct increase in the quantity of milk yielded, the quality, judging from the total solids, has during the last five years gradually improved. The percentage of fat during the same period shows a similar improvement. The performance of these animals at the London Dairy Show and at many other shows, reflects great credit on the members of the Dairy Shorthorn Association, and should encourage them not only to maintain the standard already attained but further to improve their stock for milk production.

V.—THE LINCOLNSHIRE RED SHORTHORNS.

The Lincolnshire Red Shorthorn has of late years come into prominence as a dual-purpose cow, and the admirers of the breed claim it to be an excellent tenant-farmer's cow, and a good rent-payer. Judging from the performance over the pail of cows from some of the leading herds, the animal is a wonderful milk-producer.

The breed is descended from a large, slow-growing animal, which has been greatly improved by the introduction of bulls from the Colling stock. Closely connected with its early improvement is the name of Mr. Thomas Purnell, of Reasby, near Wragby, in Lincolnshire. This gentleman aimed at producing a breed of red animals which would mature much earlier than the old Lincolnshire cow. In 1810, at the Ketton Sale, Lincolnshire, breeders secured both bulls and heifers, some of them descended from such well-known

animals as Lady Maynard, Favourite, and Comet. No attempt seems to have been made to breed the animals up to the standard required for registration in Coates's Herd Book, but in 1895 the Lincoln Red Shorthorn Association was established, and a separate register kept for the breed.

The following figures show the performance of Lincoln Red Shorthorns at the London Dairy Show, from 1907—1910 inclusive :—

LINCOLNSHIRE RED SHORTHORNS AT THE LONDON DAIRY SHOW, FROM 1907—1910 (INCLUSIVE).

Year.	No. of Cows Tested	Average Age.	Av. No. Days in Milk.	Average Amount of Milk.	Average Fat.	Average Solids not Fat.	Total Solids.	Points.
		Y. M. W.		lbs.	%	%	%	
1907	7	6 0 0	57	51·8	3·41	8·95	12·36	103·6
1908	9	6 8 0	61	48·7	3·58	8·77	12·35	95·7
1909	7	6 10 0	46	48·5	3·86	8·98	12·89	101·7
1910	8	6 9 0	79	45·6	3·80	8·99	12·79	99·4

The improvement in the milking qualities of this breed, so far as the above figures prove, has not been quite so marked during the last four years as that of the Pedigree Shorthorn.

VI.—NON-PEDIGREE SHORTHORNS.

There remains the non-pedigree Shorthorn, a class of animal which composes by far the greater number of our milking herds.

The best non-pedigree Shorthorns in the country are probably met with in North Lancashire, Westmoreland, South Cumberland, and in some parts of Ireland—more especially, perhaps, Dublin Market. The performances of this class of cow from the north-west of the country at the London Dairy Show have been consistently good. It is an excellent all-round milker and is a favourite for milk-selling, cheese-making and butter-making purposes. The chief drawback in the non-pedigree animal lies in the fact that its male produce in many cases are very moderate grazing cattle; and the spring markets in many parts of the country are often crowded with bullocks of very indifferent quality. For comparison, the following Table shows the performances of non-pedigree Shorthorns at the London Dairy Show from 1906—1910 (inclusive) :—

NON-PEDIGREE SHORTHORNS AT THE LONDON DAIRY SHOW, 1906—1910 (INCLUSIVE).

Year.	No. of Cows Tested.	Average Age.	Av. No. Days in Milk.	Average Amount of Milk.	Average Fat.	Average Solids not Fat.	Total Solids.	Points.
		Y. M. W.		lbs.	%	%	%	
1906	15	..	..	47·3	3·58	8·77	12·35	93·2
1907	22	6 1 0	56	50·8	3·54	8·92	12·46	102·4
1908	19	6 2 0	35	51·3	3·83	8·88	12·71	103·6
1909	13	6 3 0	50	52·8	3·85	8·88	12·73	108·4
1910	16	6 2 0	43	51·7	3·84	8·95	12·79	109·4

The average yield of milk for this period is higher than in either the pedigree Shorthorns or the Lincoln Reds. The most significant feature in these figures is the gradual increase in the amount of total solids.

It is worthy of notice that many of the animals in this class, which of late years have taken prizes in the milking and butter-test trials, were of a more beefy type than is generally looked for in a typical milker.

VII.—GENERAL CONCLUSIONS.

In comparing the performances of the above three sub-breeds at the pail, it will be seen that neither can claim any special advantage over the other two. In order therefore to compare these animals further, we must turn our attention to some secondary considerations, of which by far the more important are the sale of offspring and the production of beef.

Attention has already been drawn to the fact that our spring markets are often inundated with a class of bullocks in which those qualities generally sought for in a typical beef producer are often absent. This state of affairs is likely to remain as long as the produce of non-pedigree cows are placed on the market, and it is in this direction more particularly that pedigree stock shows a very marked advantage over non-pedigree animals.

It is true that in the case of a running dairy where newly calved cows are bought in and sold out again either when dry or when fattened for the butcher, the non-pedigree Shorthorn may claim an advantage so far as the initial expense of buying in is concerned. But as a dual-purpose cow the pedigree animal is by far the best to possess, for it is only by breeding from such herds that it

becomes possible for stock-breeders to improve the quality of the grazing cattle obtained from herds of milking Shorthorns.

Hence, while the non-pedigree Shorthorn is admittedly a good milker, it possesses no special value as such, and it loses all the advantages which accrue to the pure breeds, so far as breeding and sale of offspring are concerned.

We probably find in the pedigree Milking Shorthorns the best all-round animals in existence; they mature early, milk well, adapt themselves more readily than any other breed to different geological formations and climatic conditions, and will put on a fair quantity of beef. These are some of the characteristics which give these animals the leading place among dairy cattle.

V.—WEEDS AND THEIR ERADICATION.

By H. C. Long, B.Sc. (Edin.).

Every farmer knows that weeds—plants growing among cultivated crops where they are not wanted — are extremely troublesome and cause him a great deal of loss, not only owing to a reduction in his crop yields, but because he must perforce expend time, energy and hard cash in combating them. This applies both to arable and pasture land, where the farmer is in earnest, and it applies to waste land and roadsides also. Further, to prevent the entry of weeds from extraneous sources care must be taken to secure pure seeds. Gardeners are also pestered by weeds, and great attention must be given to lawns, paths and beds in order to keep down objectionable plants. In regard to lawns one type of weed only need be mentioned as an example, *i.e.*, the plantain, and all gardeners who read the lament of the Plantain-Demon in a late issue of *Punch* will doubtless sympathise with him! A year or two ago the Bishop of Newcastle defined agriculture as "a controversy with weeds."

THE DISTRIBUTION OF WEEDS.

Many of the worst weeds are widely distributed in Great Britain, broad-casted by several agencies, and occurring in almost incredible numbers. In an enquiry conducted by the writer during 1909, twenty-nine practical agriculturists of many types, and

scattered between the North of Scotland and the South of England, were asked to state what they held to be the six worst weeds of arable and grass land respectively. In regard to arable land, species of Couch or Twitch (*Triticum*, *Agrostis* and *Arrhenatherum*) were mentioned most often (32 times), followed by Charlock and Runch (28 times), Docks (16 times), Thistles (16 times), Coltsfoot (13 times), Chickweed (9 times), Bindweeds (8 times), Spurrey (7 times), and so on. Analysis of the grass land returns shows that Thistles head the list, they being mentioned 22 times, while Buttercups (16 times), Yorkshire Fog and Creeping Soft Grass (9 times), Soft Brome (6 times), and others follow in order of demerit. These figures show that many of the weeds named occur as pests throughout the country.

Areas infested with weeds are a source of great annoyance and trouble as distributors of weeds. What may be termed weed-distributing areas on suburban building plots are far too common, they are choked with weeds, and the seeds from them are annually scattered in all directions.

The Creeping root-stocks of many weeds serve to spread them, either by insidious spreading in the soil, or by means of broken portions which, being transported in various ways, subsequently start new centres of infestation.

The number of weeds which may occur on a given area is extraordinary. In May, 1909, we found 1,050 *seedlings* on a square yard of good garden soil, and on endeavouring to separate them into species after considerable labour. 654 were identified as buttercups, chiefly the creeping species (*Ranunculus repens*), 107 were annual meadow grass (*Poa annua*), 60 were docks, 26 goosefoot, 25 groundsel, 15 shepherd's purse, 14 annual sow thistle, 10 chickweed, and so forth. The figure of 1,050 seedlings on a square yard is equal to 5,082,000 per acre, and this may perhaps enable one to appreciate the harm that may quickly be done if weeds are left to grow even to a few inches high. A Continental investigator, Korsmo, found in a fallow field, within a depth of 9·8 inches, 8,680 germinable seeds per square yard, or over 41 millions per acre, while in a field intended for spring grain, where the same crop had been sown four years in succession, he found no less than 28,210 per square yard, or over 136½ millions per acre!

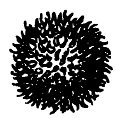
The number of seeds produced by weeds is enormous; a single poppy plant may produce 50,000 to 60,000; groundsel 300 to 20,000; wild carrot 1,200 to 110,000; charlock 4,000; dandelion over 5,000; scentless mayweed 34,000 to 310,000; cleavers over 1,000; and shepherd's purse 45,000.

These weed seeds are distributed in many ways, by the wind, when the seeds are winged and fly more airily than aeroplanes (thistles, dandelion, etc.), or when they are very light (poppy, broom-rape); and by the agency of animals and man to whom they adhere by hooks, etc. (cleavers, burdock, and some grasses). Some of these types of seeds or fruits are shown in the accompanying illustration—the feathery fruits of thistles, the hooked fruit of cleavers, the winged seed of yellow rattle, and others. Seeds

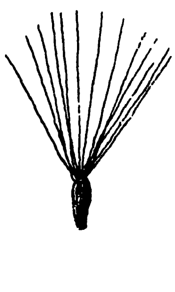
Seeds showing means of natural distribution.

Ranunculus arvensis (Corn Buttercup).

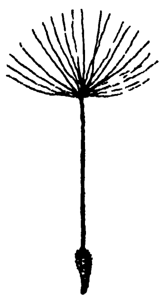
Geum urbanum (Avens).



Galium Aparine (Cleavers).



Sonchus arvensis (Corn Sowthistle).



Taraxacum officinale (Dandelion).

Rhinanthus Crista-galli (Yellow Rattle).

are also distributed by transportation by rivers, floods, etc., and by railways; by hayloft sweepings, manure, and thrashing machines, and particularly when occurring as impurities in agricultural seeds—a point of very great importance.

The distribution of plants by natural agency is in many cases extraordinary. Bates fifty years ago suggested that eggs of insects and seeds of plants might be carried in pumice from Cotopaxi to the Atlantic on the broad bosom of the Amazon, and thus be

stranded eventually many thousands of miles from their source. In another instance many seeds of plants were found by Darwin embedded in a ball of earth attached to the foot of a partridge, and 80 of these seeds germinated. A striking instance is that of the volcanic eruption of Krakatoa in 1883. What was left of the island was but a blackened mass, yet at the present day it is covered with vegetation—Nature regenerated. A case that came to notice a short time ago is also of considerable interest, the "bur" of the weed Burdock being attached for advertising purposes to a paper butterfly, thus the weed was ensured a wide distribution. Indeed, it led to the Agricultural Department of one of the States of the Australian Commonwealth requesting the withdrawal of the offending advertisement. We have lately seen the "bur" attached to a coloured feather on which an advertisement was printed.

Considerable annoyance and loss are caused to many farmers and gardeners by the carelessness of a neighbour, who takes little or no pains to cut down thistles and similar wind-distributed weeds, the result being that their seeds are blown in thousands on to the adjacent land. In England there is, unfortunately, no legal remedy for such a state of affairs.

Another source of weed distribution is the large amount of building land which is now lying enclosed and uncultivated. Much of it may be seen to be smothered with weeds of many species, thistles often several feet high, scattering their seed far and wide. Here again owners and others should be compelled to keep their plots clean and trimmed, or allow the plots to be cultivated by those who would be glad of temporary gardens.

WEEDS AS SOIL INDICATORS.

It has long been recognised by farmers that certain plants afford a fairly good indication of the type of soil on which they grow—not simply because they are found growing on such soils, but because of their superabundant and strong growth there. Poor soils and good soils, wet soils and dry soils, sandy soils and calcareous soils—all bear in the natural state a more or less typical vegetation, and though many plants are commonly found on several of these classes of soils, yet each species will in general flourish better and more abundantly on a particular type of soil. Indeed, so distinctly do certain weeds predominate on soils of a given character that they may be regarded in the light of real indicators of the quality and type of the soil on which they occur.

"It has ever been known that different wild plants affect peculiar

soils. Thus, land on clays, limestones, sandy tracts, and the mixture of these which we may term loams, will each grow weeds peculiar to itself; and though some kinds of weeds will grow everywhere, yet a correct observer may form very accurate notions as to the nature and properties of a soil by examining its spontaneous vegetation."*

The following couplets also are of very considerable interest as indicating a general recognition of the relation between soils and the local flora :—

"When furze and fern will thrive and heath is long,
The land is good, and all the trees grow strong."

"Where grass is found the heath between,
A stiff, more clayey soil is seen."

Anon.

It has to be recognised, however, that while certain plants are more or less related to given soils, they may nevertheless be found to some extent on all kinds of land, while other species are so widely distributed without reference to soil, that they can scarcely be viewed as soil indicators. Further, it may be said that the character of a soil is more truly indicated by the fact that, being present, the weed shows characteristic, strong and plentiful growth. For example, *Spiræa Ulmaria* might grow and flower in a comparatively dry garden, but not in the same way as in the damp low-lying meadows, which are its natural habitat. We see, therefore, that a soil must not be dismissed as poor simply because a few stray plants of spurrey, rest-harrow, dyer's green-weed, or quaking grass are found on it, nor held to be good land because patches of goosefoot or chickweed are observed. There is a great difference between a really characteristic occurrence of such plants in a field or on a farm, and the presence of a few plants which may occur on most soils. One must judge, therefore, principally from their abundance, luxuriant growth, and general presence on the area under consideration.

The plants or weeds found in damp, low-lying meadows, or badly drained fields, will almost certainly be quite different from those occurring on high-lying or well-drained fields, even on the same farm, each species "doing" best under conditions most natural to it. Grasses also have been held to be particularly good soil indicators.

* Morton's Cyclopædia of Agriculture, 1856.

The weeds growing on sandy soils are not only intolerant of lime, but are associated with a dry soil; the characteristically rich floral species growing on calcareous soils are related to plants which demand lime; loams are suitable for the growth of most species of weeds, some of which particularly flourish on good rich land; and heavy clays are less weedy than perhaps any other type of soil, for they are cool, close in texture, and retentive of moisture.

As we have written elsewhere, "It is probable that the chemical composition of soils has a greater influence than the physical, while it is well known that moisture-retaining capacity, the proportion of humus, the presence or absence of lime, conductivity to heat, and other factors, are of very considerable importance in determining the flora which will best flourish on the soil of a district (*Standard Cyclopædia of Modern Agriculture*)."

We may now give a suggestive list of weeds which, bearing in mind what has been said above, may be held in a general way to indicate soils of the type specified :—

WEEDS OF POOR SOILS.

Spurrey (*Spergula arvensis*).
Ragwort (*Senecio Jacobæa*).
Ox-eye Daisy (*Chrysanthemum Leucanthemum*).
Rest Harrow (*Ononis spinosa*).
Dyer's Green-weed (*Genista tinctoria*).
Yellow Rattle (*Rhinanthus Crista-galli*).
Sheep's Sorrel (*Rumex Acetosella*).
Quaking Grass (*Briza media*).
Yorkshire Fog (*Holcus lanatus*).
Sterile Brome-grass (*Bromus sterilis*).
(Absence of Clover).

WEEDS OF GOOD LOAMY SOILS.

Charlock (*Sinapis arvensis*).
Shepherd's Purse (*Capsella Bursa-Pastoris*).
Cleavers (*Galium Aparine*).
Chickweed (*Stellaria media*).
Corn Cockle (*Agrostemma Githago*).
Fumitory (*Fumaria officinalis*).
Scarlet Pimpernel (*Anagallis arvensis*).
Goosefoot or Fat Hen (*Chenopodium album*).
Persicaria (*Polygonum Persicaria*).
Spurges (*Euphorbia* sp.).
Speedwell (*Veronica* sp.).
Fool's Parsley (*Aethusa Cynapium*).
Stinging Nettles (*Urtica* sp.)
Buttercup (*Ranunculus* sp.)
Thistles (*Cnicus* sp.)
Coltsfoot (*Tussilago Farfara*).

WEEDS OF GOOD LOAMY SOILS.

Groundsel (*Senecio vulgaris*).
Dandelion (*Taraxacum officinale*).
Annual Sow Thistle (*Sonchus oleraceus*).
Rye-like Brome Grass (*Bromus secalinus*).
Darnel (*Lolium temulentum*).

WEEDS OF DAMP SOILS.

Lady's Smock (*Cardamine pratensis*).
Silver Weed (*Potentilla Anserina*).
Ragged Robin (*Lychnis Flos-Cuculi*).
Cowslip (*Primula veris*).
Meadow Sweet (*Spiræa Ulmaria*).
Butterbur (*Petasites vulgaris*).
Knotgrass (*Polygonum Aviculare*).
Orchis (*Orchis* sp.).
Lousewort (*Pedicularis palustris*).
Horsetail (*Equisetum* sp.).
Rushes (*Juncus* sp.).
Sedges (*Carex* sp.).
Mosses (*Musci*).
Tussock Grass (*Aira caespitosa*).
Floating Foxtail (*Alopecurus geniculatus*).

WEEDS OF DRY, SANDY SOILS.

Poppy (*Papaver Rhoeas*).
Corn Gromwell (*Lithospermum arvense*).
Spurrey (*Spergula arvensis*).
Sandworts (*Arenaria* sp.).
Annual Knawel (*Scleranthus annuus*).
Corn Blue-bottle (*Centaurea Cyanus*).
Corn Marigold (*Chrysanthemum segetum*).
Foxglove (*Digitalis purpurea*).
Hemp Nettle (*Galeopsis Tetrahit*).
Heather (*Calluna vulgaris*).
Heaths (*Erica* sp.).
Gorse (*Ulex* sp.).
Broom (*Cytisus Scoparius*).
Sheep's Sorrel (*Rumex Acetosella*).
Wall Barley Grass (*Hordeum murinum*).
Bulbous Oat Grass (*Arrhenatherum avenaceum* var. *bulbosum*).
Sterile Brome Grass (*Bromus sterilis*).
Bracken (*Pteris aquilina*).

WEEDS OF CALCAREOUS SOILS.

Penny Cress (*Thlaspi arvense*).
Fumitory (*Fumaria officinalis*).
Bladder Campion (*Silene inflata*).
Corn Gromwell (*Lithospermum arvense*).
Viper's Bugloss (*Echium vulgare*).
Field Madder (*Sherardia arvensis*).
Chicory (*Cichorium Intybus*).
Scabious (*Scabiosa* sp.).

WEEDS OF CALCAREOUS SOILS.

Erect Brome Grass (*Bromus erectus*).
Bent (*Agrostis stolonifera*).
Downy Oat Grass (*Avena pubescens*).
Quaking Grass (*Briza media*).
Small Crane's-bill (*Geranium pusillum*).

WEEDS OF CLAY SOILS.

Corn Buttercup (*Ranunculus arvensis*).
Primrose (*Primula veris*).
Wild Carrot (*Daucus Carota*).
Dyer's Green-weed (*Genista tinctoria*).
Rest Harrow (*Ononis spinosa*).
Coltsfoot (*Tussilago Farfara*).
Perennial Sow Thistle (*Sonchus arvensis*).
Field Mint (*Mentha arvensis*).
Black Bindweed (*Polygonum Convolvulus*).
Havers, Wild Oat Grass (*Avena fatua*).
Slender Foxtail (*Alopecurus agrestis*).
Marsh Bent Grass (*Agrostis alba*).
Red Bartsia (*Bartsia odontites*).

LOSSES DUE TO WEEDS.

Weeds cause loss to the farmer and gardener in many ways, some of which may be briefly referred to here. In occupying space which is required by the cultivated crop they rob the latter of moisture, food, air, light and heat—or, in general terms, "crowd out" the crop. The average analysis of six weeds (annual sow thistle, spurrey, persicaria, runch, cornflower and yarrow) showed that the dry matter contained 2.38 per cent. of nitrogen, 0·93 per cent. of phosphoric acid, 3·08 per cent. of potash, and 2·86 per cent. of lime, the four most important and valuable constituents of cultivated crops. Weeds may harbour insect and fungus pests, be parasitic on crops, poisonous to farm live stock, stop up drains, or drag down crops by climbing and twining round them. The seed of weeds when present also materially reduces the value of agricultural seeds.

Money must therefore be spent to keep weeds down, or the weeds will reduce the yield of the crop very considerably. This fact has been shown by several striking experiments. Wollny has estimated that the annual loss of crops due to weeds in Bavaria averages 30 per cent. per annum. Korsmo found in Norway that the loss in money value on weedy compared with clean plots of hay, barley and potatoes, amounted to 47, 46 and 49 per cent. respectively. At Reading College Farm a plot of mangolds hand-weeded only after "singling" yielded 39 tons per acre, and a plot

receiving two hoeings after "singling" yielded 37¼ tons per acre, but an unweeded plot yielded only 16¼ tons per acre. The comparative yield of "no weeding" to "hand-weeding" was therefore as 100 to 240. Schultz quotes two cases in which the loss of grain due to charlock in oat crops amounted to 33 and 67½ per cent. respectively. Percival has stated that in field experiments "In many cases the moderately-weeded areas carried from 40 to 50 per cent. more crop than those on which the weeds were unchecked."

POISONOUS PLANTS.

An important consideration connected with the question of weed infestation on the farm or in the garden is the extent to which plants of a poisonous character are present, and liable to result in injury to man or domestic animals. Though the number of wild plants which may be termed poisonous is perhaps small compared with the total species included in the British flora, yet there are many which occur quite commonly, and which may cause serious losses of farm stock, while they may also cause illness and death among human beings, particularly children. There are also a number of cultivated plants and trees which are poisonous, and are often responsible for trouble. When it is realised that the presence of meadow saffron or water hemlock in a meadow may occasion the loss of valuable animals, or that the ingestion of certain wild berries by a child may result in death, it will be clearly seen that some knowledge as to which are the most poisonous plants is desirable, not only on the part of farmers, but of all dwellers in the country. The farmer may, after reading these lines, possibly realise that mysterious losses among his stock have probably been due to one or other of our native poisonous plants. One example will suffice here. It was stated two years ago by Mr. J. C. Rushton, instructor in agriculture for the Staffordshire County Council, that a farmer in South Staffordshire in one year lost seventeen milking cows; in the autumn of 1908 he lost seven calves, and in 1909 he lost a number of sheep and a number of cows. After some investigation, it was found that in one field meadow saffron and water hemlock abounded, and that these plants were the cause of the loss.—(*Staffs Weekly Sentinel*, Aug. 21, 1909).

In his *Poisonous Plants of all Countries*, A. B. Smith includes about a hundred British species, while several others are mentioned as "reputed" to be poisonous; while, in addition, many

fungi (toadstools) are also poisonous. The following "short list" of the commoner plants which may be poisonous to farm live stock will, we think, prove useful:—

- Acrid Buttercup.
- Celery-leaved Buttercup.
- Lesser Spearwort.
- Corn Cockle.
- Laburnum.
- Bryony.
- Hemlock.
- Cowbane.
- Water Dropwort.
- Fool's Parsley.
- Deadly Nightshade.
- Bittersweet.
- Dog's Mercury.
- Yew.
- Meadow Saffron.
- Oak (Acorns).
- Spurges (*Euphorbia*, sp.).
- Hound's Tongue.

THE PURE SEED QUESTION.

At the present day there can be little excuse for the sale of impure agricultural seeds. The development of the science of seed-testing and analysis dates from about 1875, when Nobbe published his great work, *Handbuch der Samenkunde*, and revealed the state of fraud and ignorance which then prevailed. Since then Official Seed-testing Stations have been started in almost all countries in the world, and samples of seeds may now be officially tested in Ireland as regards purity at a charge of 3d. to farmers, and 1s. to seedsmen. The Irish Department of Agriculture and Technical Instruction started their seed-testing station in 1900, and it is the first and only official station of the kind in the United Kingdom. Up to the end of 1909 reports had been made on the genuineness, purity and germinating power of 11,000 samples, and the yearly average is now over 2,000 samples. The enormous importance of seed-testing ought to be well known to farmers and seedsmen throughout Britain. It would be easy to quote cases in support of the statement that in all countries many impure samples of seeds find their way into the market and on to the farm. Seedsmen of all classes ought to convince themselves that the seeds they sell are as pure as modern treatment can make them, and of high germinating power. It is a pity that seedsmen have not long since combined to form and utilise to the full a kind of clearing house or seed-testing station under the control of recognised authorities, who would be responsible for the examination and passing on to the market of agricultural seeds. The same remark applies to farmers, who ought to have a central station to which all Farmers' Clubs and Chambers of Agriculture should be affiliated, for the purpose of the adequate testing of samples of seeds purchased by members.

THE ERADICATION OF WEEDS.

By the judicious application of certain principles and preventive and remedial measures, weeds can to a very considerable extent be reduced, and in some cases almost completely eradicated.

There are many means by which weeds may be combated, but as preventive and remedial measures vary very much according to the species of weed under consideration, these can scarcely be fully discussed in so short a paper as this. There are, however, some general principles which are not yet sufficiently utilised, and these may briefly be mentioned. If farmers are to reduce weeds *they must work together*—the eradication of almost all kinds of weeds may be attained by CO-OPERATION. To this end the farmers in a given district should meet and mutually agree to co-operate in the destruction of weeds by given and uniform means. Such district groups of farmers might constitute a farmers' weed club and these clubs again be affiliated to a National Farmers' Union, which could profitably discuss the question periodically. It may be suggested that the means of eradication should take four forms: (1) The mechanical destruction of certain species which may be prevalent in a given district; (2) The destruction of certain species by spraying; (3) The supply of pure seeds; and (4) The practice of a number of general principles.

(1) Co-operative mechanical destruction should include the cutting of weeds on waste lands, roadsides, etc; the purchase and use of surface weeders, like the American weeder or the poppy killer; systematic cutting of thistles, bracken and other weeds, and the extraction of docks, often employing a thistle and bracken cutter; and the use of attachments for binders and reapers in order to collect weed seeds beaten out during harvesting operations. School children might, perhaps, be judiciously employed to collect special weeds; a year or two ago Dr. Ewart, Government Botanist of Victoria, suggested the giving of prizes to school children for this purpose, and a police magistrate offered prizes, the result being that 12,000 plants of ragwort were brought in during the first four days, and the number quickly rose to 20,000 plants.

(2) Co-operative spraying might be widely practised, if only for the purpose of eradicating charlock. (See also p. 57).

(3) The co-operative supply of pure seeds has already been touched on above. Combination among only fifty farmers will enable them to purchase their seeds on reduced terms, under guarantee, and to have them sampled and thoroughly tested

for genuineness, purity and germinating capacity. Though seeds are tested for farmers at several of our Agricultural Colleges there are probably few authorities who are in a position to decide by seed analysis whether clover or other seeds had their origin in Mid or South Europe or in North America. But such authorities exist and should be consulted. Seed-testing has been studied until it is a fine art, or perhaps we should rather say a science, and it is a pity that British seedsmen are unable to apply to a central station in their own country. As already suggested, a co-operative institution of the kind, recognised as authoritative by farmers and seedsmen alike, would be of great value.

(4) The following general means of eradicating weeds should be practised:—Thorough cultivation and tillage operations; the growth of dense "smother" crops like vetches, maize, sainfoin, lucerne, trifolium; spudding; feeding off with sheep (*e.g.*, for spurrey); manuring, particularly liming (for spurrey, corn marigold, sheep's sorrel and bracken); draining; the destruction of refuse from threshing and winnowing machines; and the thorough cleansing of threshing machines before they leave a farm.

THE DESTRUCTION OF WEEDS BY CHEMICAL MEANS.

The fact that a solution of copper sulphate would destroy charlock without damage to the cereal among which it grew was discovered in France in 1896, by M. Bonnet. Almost contemporaneously H. L. Bolley commenced investigations on the subject in the United States of America. Spraying experiments in relation to weed destruction have since been made in France, Germany, Great Britain, the United States, Canada, and other countries, and some interesting and useful results obtained. Still there is plenty of scope for further investigation, for the data in connection with many species of weeds are not reliable, or at any rate, not wholly satisfactory.

Subsequent to the French discovery of 1896, many trials were made in Great Britain, and it was soon found that the facts were beyond dispute, young charlock seedlings being readily destroyed among cereal crops by spraying with a 2 to 4 per cent. solution of copper sulphate, without permanent harm to the cereals. It was also found that somewhat similar, if less satisfactory, results were obtained by using a 15 per cent. solution of sulphate of iron. Experimental trials have since been made with a variety of sub-

stances, among them being arsenite of soda, arsenate of soda. corrosive sublimate, common salt, carbolic acid, hydrochloric acid, sulphuric acid, calcium cyanamide, carbon bisulphide, kainit, nitrate of soda, sulphate of ammonia, chloride of potassium, liver of sulphur, and kerosene. Such substances either destroy or largely cripple many species of weeds, but the three first should rarely be employed, except on gravel and similar paths. Further, lime, caustic soda, and paraffin are widely employed to destroy moss, fungi and lichens on fruit trees. A survey of what was then known on the subject of the destruction of weeds by chemical means was given by the writer in the issues of *Knowledge* for October and November, 1910, and it is only possible here to refer to the practical results.

In the course of his investigations, Bolley found that flower parts, and parts of plants covered with "bloom" or waxy coatings, are more or less protected, and this has been confirmed in other cases. Bolley further observed that succulent and slow-growing plants are more easily destroyed by sprays than others: that plants with hairy surfaces are more readily killed than "smooth" plants: that chemicals act differently on plants of different families, even though the plants be equally wetted—*e.g.*, charlock and dandelions are easily damaged by a solution of copper sulphate, while the creeping thistle and clover are slowly attacked; and lastly, that most of the chemicals with which he experimented quickly destroy the tissues of any plant where the surface is broken.

Three questions are deserving of consideration:—(1) The effect of chemicals on cultivated crops; (2) The effect of the chemicals on weeds; and (3) The cost of application of the material to be employed.

Little of practical value is known on the first point, except as regards the sulphates of copper and iron, though probably many of the materials mentioned above would be liable to do great injury to cultivated crops as well as to weeds. Evidence appears to show that a 4 per cent. solution of copper sulphate may be employed to destroy charlock (or other weed) among wheat, oats or barley, beans, peas, tares, clover or "seeds," sainfoin and mangolds, without serious damage to the crops, though the evidence in one or two cases has been conflicting. As regards sulphate of iron, it was shown in the Leeds experiments that a 12 per cent. solution only slightly damaged peas, beans, carrots, onions, beet, parsnips, mangolds, swedes, and turnips.

As to weeds themselves, the following summary may be taken as embodying the conclusions most useful to farmers. Charlock,

runch, spurrey, and persicaria or redshank, may be destroyed by a 3 to 5 per cent. solution of copper sulphate (98 per cent. pure). Docks, dandelion, poppy, perennial sow thistle, corn cockle, groundsel, cornflower, black bindweed, dodder, thistles and coltsfoot are partially injured or largely crippled by a 2 to 5 per cent. solution of copper sulphate (40 to 50 gallons per acre), or a 15 per cent. solution of iron sulphate (40 to 70 gallons per acre). The wild onion is much damaged by a 5 per cent. solution of carbolic acid; the poppy (*Papaver Rhœas*) is much injured by a 2 per cent. solution of copper sulphate, and is stated to be very sensitive to a 13 to 20 per cent. solution of iron sulphate; a 15 per cent. solution of kainit has practically destroyed stinging nettles in grass land; calcium cyanamide has been found useful for destroying charlock in corn crops; fairy rings in grass land may be destroyed by watering with a solution of iron sulphate (8lb. in 30 gallons for 60 square yards), followed by applying one ton of lime per acre after a week's interval; and it was stated in *The Times*, over a decade since, that a 15 to 40 per cent. solution of nitrate of soda and sulphate of ammonia caused young charlock in the rough leaf to wither in a couple of hours.

The valuable effects of spraying against charlock may be shown by quoting a single instance. In experiments conducted by Sir R. Patrick Wright at the West of Scotland Experiment Station, an oat crop was sprayed twice with a 3 per cent solution of copper sulphate, at a cost of 14s. per acre. On an average of two years, the sprayed area yielded 69 bushels of dressed grain, 7 bushels light grain, and 45½ cwt. of straw per acre, while the unsprayed area yielded 47 bushels dressed grain, 4 bushels light grain, and 35¾ cwt. of straw per acre—the increase, therefore, due to spraying, was 24 bushels dressed grain, 3 bushels light grain, and 9¾ cwt. straw, or an increase in value of about £4 per acre for an expenditure of 14s. While this increase could not be expected in every case, yet it affords an example of what has actually been experienced on an area very badly infested with charlock.

The cost per acre depends largely on the cost of the materials employed, the price of a machine, and of labour, etc., but it may be said that 7s. to 9s. per spraying of a 3 to 4 per cent. solution of copper sulphate is near the mark.

On the co-operative principle, by sharing one or two spraying machines, and regularly employing a man and a lad to spray their crops in rotation when necessary during the season, farmers could spray against charlock and other weeds at a minimum cost.

As has been stated elsewhere, the spraying machine for use against

weeds should be as simple and rigid in construction as possible; parts in contact with the solution should be of wood, rubber, or brass; a gauge should show that the pressure at the nozzle does not fall below 100lb. per square inch; and the wheels should have wide tyres. The barrel, or tank, should hold at least 50 gallons, so as to cover about an acre without stopping to refill.

VI.—SOME DISCURSIVE OBSERVATIONS ON SHEEP.

By W. J. Malden.

Apologies are seldom needed for broaching the subject of sheep to a man who has a practical interest in them. It is a topic which he is always willing to discuss, because, from the multitudinous difficulties which at one time or another face the sheep-breeder and feeder, he realises that sheep management presents more problems of a difficult nature than are found in any other branch of farming. The fact that when once a man has devoted himself to sheep he is only contented when he is among them, is proof of the absorbing nature of sheep husbandry.

In these days, while pure breeding is carried out with the greatest care under the auspices of Flock Book Societies, there is an increasing tendency to introduce sheep of other breeds into many districts; in other words, to develop cross-breds where, not very many years ago, the local breed was almost exclusively to be found. This is mainly due to the demand for a better quality of mutton, and the consequence is that the call on the Down breeds has been very heavy. It is equally marked in Scotland and Ireland, as in England, and is a demand which cannot well be other than permanent. Under these circumstances those who, from local conditions, are in the position to devote themselves to pure breeds of good type can look for a consistent market. It is, however, a market that at present does not call for the highest-priced rams. In some breeds foreign demand is strong enough to influence materially the profits of breeding, but in others the profits go very largely to but few flocks in a breed. The time now seems to have come when breeders, in looking for a market in districts other than those to which a breed is indigenous, should endeavour to meet the needs of these new districts. There are signs that this is being done, for undoubtedly there have been changes in the typical features of

breeds, but how far this is the result of direct intention in cross-breeding it is difficult to say. The steady home market is worth fostering; and the best animals for this are not necessarily the tail-enders from the most successful show flocks. It would be well if some of those who breed well, but with no intention of show-yard competition, were to enquire into the needs of the cross-breeder in the various districts where their breed is suitable, and use their knowledge and experience to this end.

The laying down of much land to grass has altered conditions in many districts, and sheep from the north of the Tweed, the Cheviots, and other places, are found in districts that but a few years ago knew them not. It does not follow that proximity to the home of a recognised breed causes this particular breed to be the best to keep, especially if the soil differs materially from that on which such breed has originated and been maintained. For instance, a breed which has gained great notoriety on the clays may be unsuitable for the chalks, although chalk and clay may be but a few miles apart. Any change from practice should be cautiously made. There is no doubt that within recent years more attention has been paid to the subject, and in many cases a more suitable breed than the local one for particular land has been found. It looks as though some of the minor breeds which have attained excellence might be more often tried; but, as a rule, even in the bigger show yards, there is a tendency for visitors to give all attention to the breeds with which they are locally acquainted, and to enquire little about the possibilities of others. In view of the extension of cross-breeding; and the occasionally successful introduction of breeds from distant districts, those whose land does not permit them to keep the pure breeds associated with their districts might reasonably study the newer breeds of sheep.

A point on which there is great diversity in practice is that of the suitability of certain crops for certain breeds. For some breeds there are those who strongly advocate a certain crop, while others as violently oppose it. One often meets with strong opponents to a particular crop who base their opinion on hearsay, never having had any personal experience. Perhaps from some remark heard in early life, or expressed by some friend to whose opinion they generally bow, they are willing to condemn or bless. Again, opposition to a crop may often be the result of a single experience which was unsatisfactory; thus a crop, or a method of growing or manuring a crop, is condemned when the ill doing was due to the sheep them-

selves. Sheep go wrong mysteriously at times, though if one knew more of the internal parasites of sheep the mysteries would be of less frequent occurrence. When sheep do go wrong the cause is often ascribed to something a little unusual in treatment which may be apparent, rather than to ailments the existence of which is not apparent. The experience may come to a man of recognised knowledge among sheep, with an emphatic manner of expressing his views, and in such a case it is not unlikely that he will get a following not less emphatic than himself.

The general management of sheep is, as a rule, conducted on sound lines, but there are some points which may well be emphasised. One which has a considerable influence in preventing the improvement of flocks—even the most highly bred—relates to the condition of the teeth. In no breed-society, coming under the authority of the National Sheep Breeders' Association, are the teeth of sheep mentioned among the standards of essential requirements or points which are issued. A sheep may be disqualified if its dentition is not in accordance with that of sheep at the age the sheep is entered at—a four-tooth sheep cannot be shown as a two-tooth; but so far as sheep societies go that ends the matter. Yet the first essential in a sheep is that it shall be able to eat, and the first cause for casting a sheep is because it cannot. To eat, it must have good teeth. There are few young sheep whose teeth are not good enough to eat with, and as so many sheep are killed when young, probably that must be accepted as the reason why the state of the teeth is disregarded. Why is it that so many ewes are culled at by no means an old age because they are broken mouthed, whilst others which have lived under exactly the same conditions have sound mouths, if it is not due to the fact that some have better teeth than others? If some can be bred with better teeth, why should not all be? Breeds of sheep which carried little wool about the head thirty years ago have, by skill in selection, become well covered, and many other features have been similarly developed. There is, therefore, no reason why the teeth should not be.

Long teeth above the gums with short fangs, are much more readily loosened than are those which are short above and long below, because the long tooth not only gives more leverage when, for instance, it is forced into a frozen swede, but the shallow fangs can little resist the force applied, so that at a comparatively early age such teeth become loosened. Teeth should also be closely set. When they are wide apart much more stress is likely to be laid on an individual tooth than when they are close together. A tooth is helped by those on either side, consequently, when they are close, the strain on each is less, and its useful life is longer.

"It's a pity she must go, shepherd, she has bred some good rams, and is not old yet." "'Tis, sir, but her teeth are broken and she won't go round again." How often has this been said at culling time! Yet how seldom do breeders consider the state of the teeth when selecting their ewes. They discard the ewe when the teeth are gone, and put another ewe (to be later on discarded for the same reason as the one she displaced) into the flock without thought of the kind of tooth it has. If judges take no notice of the state of the teeth in the showyard, why should any notice be taken at home? There is a good reason though why it should be done, for bad teeth hinder the building up and improvement of the flock. In many districts a certain number of ewe lambs are set apart to renew the flock each year. The draft in one year may be better or worse than in the preceding year. With all care in the selection of rams, the fall of lambs may be disappointing, they may have nicked badly with the ewes, and to put them into the flock may be a mistake which will show its ill effect for years. But the practice is to put so many in and take so many out, and many breeders will not vary this practice. Moreover, although the oldest ewes are still comparatively young, there are so many with bad teeth that must go that to replace them demands the full draft of young ones available. If the older ones had better teeth more could remain in, and fewer of the inferior young ones would be needed. However, having broken mouths they have to be sold at the price of broken-mouthed ewes, or to be fattened and sold at ewe mutton price. And this after having been kept for two years to produce a lamb, and perhaps two more years to produce two more lambs. Bad udders, eversions, and other ailments come from other causes than breeding; but bad teeth come from careless breeding, which invites loss. Few recognise that the duration of a ewe as a successful breeder is mainly controlled by the quality of the teeth.

Sheep breeders are certainly much more happily placed in respect to foot-rot than they were before the adoption of the foot-rot bath became common, for nothing has lightened the troubles of the shepherd more than the bath. All foot paring has not been done away with, for when sheep are on soft land and the hoof does not wear down fast enough, it requires to be shortened, and the knife must be used; but, by preventing foot-rot, the abnormal growths are to a great extent hindered. Several substances are recommended for the solution, but I have found nothing more efficient than sulphate of copper. It has the advantage of being a safe article to keep on the farm, which cannot be

said of arsenic and some other things in use, and it does not unduly harden the hoof. In the use of this bath there is one detail which is not always observed. The solution should be deep enough to cover the foot well, otherwise the liquid will not reach the top of the cleft. A certain loss of solution occurs with every sheep dipped, as some is carried out, and often some is splashed out; renewals are therefore frequently necessary.

The question of washing sheep before shearing is one often discussed, but there does not seem to be any unanimous opinion as to its desirability. The practice is mainly regulated by the nature of the wool, and the nearness to the time when the sheep are to be marketed. Open-woolled sheep collect little dirt on the skin, and give little trouble at shearing, but close-woolled sheep, particularly when wintered on arable land, get so much grit into the wool, especially across the loin, that good shearing is almost impossible; consequently animals to be sold within a short time do not show themselves well, and market badly. The prejudicial effect of bad shearing in a close-woolled sheep may be seen for months afterwards; but long-woolled sheep soon grow out of it. Washing is, therefore, more popular in the south than in the north. A further reason for washing is that in districts where it is generally done, farmers rarely find a good market for unwashed wool.

The advantage of shearing lambs in summer is another debateable question, also rather affected by circumstances. Where lambs fall early, are looked after well throughout. and are intended to be sold fat in autumn, shearing often acts advantageously. It is helpful in the treatment of "fly" during the hot weather, and less dip is required when fulfilling the dipping regulations; while the lighter fleece leaves the animals more comfortable during hot weather, and comfort greatly tends to better thriving. Where sheep have to go through winter, more particularly store animals and late lambed and weak ones, a long fleece makes a better rain-shield, especially on grass land, where there is no dirt to attach itself to the belly wool. Where long-woolled sheep are wintered on roots, and are frequently in muddy pens, the sheep are often so laden with dirt that they suffer greatly, and doubtless thrive slower than if they had been freed from the means—viz., the belly wool—of collecting it. A lamb shorn in summer loses the protection from wet that the natural fall of the wool provides, and rain falls directly on to the skin, chilling the loin and also those easily affected and important organs, the kidneys. Some hold that it is advantageous to shear lambs because they are better able to shake wet from the fleece; this is all right when they are shaking themselves, but they cannot

always be doing this, consequently they are almost constantly suffering from the wet when it rains. Wool, when in a natural condition, is practically a thatch. It is also greasy, consequently the wet is led away from the skin, and though the fleece may be wet, the skin may be dry. Drying by evaporation lowers the temperature about it, and if the wet is evaporated whilst it is in contact with the skin, the temperature of the body of the sheep is lowered; but the evaporation of moisture not in contact with the skin influences the body temperature but little.

Where sheep are sent out for agistment, as in the case of the Kent or Romney Marsh breeds, many are shorn as lambs, because such agisted sheep are not carefully shepherded, and losses from "fly" are heavy in mild, moist autumns, and also during winter. How far this is directly influenced by wet skins cannot be said, as so many losses occur from lung and stomach worms. and it is difficult to determine what share in this the chilling bears. But as the keeping up of tone is an important matter in connection with these attacks, anything that debilitates the animals must be prejudicial. Of course, all old sheep have shorn fleeces, but old sheep are better able to resist attacks than are lambs, and the loss from internal parasites is far less.

Every spring one reads remarks on the lambing season, in which the proportion of twins is discussed as though it were influenced by the weather during winter. Such statements are thoughtless, because the question is settled when the ewe goes to the ram; and the receptiveness and conceptiveness of the ewe depends very much on its condition at the time. Apart from the natural fecundity of the ewe, those which are either very poor, very fat, or are at the time rapidly declining in condition, are not likely to produce so many twins as those which are in good "fresh" condition, and are at the moment still improving. This is generally recognised. hence the common endeavour to "flush" the ewes at rutting time. The breeds which lamb early in the year, as a rule, produce the greatest number of twins; they get the best food at and just before rutting time. As the year proceeds, grasses lose their nutritive properties, and sheep dependent upon them are likely to fall slightly in condition. In years of plenty, ewes are liable to become too fat in late summer and early autumn, and those which go to the ram in October and November, or later, are in a falling back condition: this is exactly opposed to "flushing," where a corresponding increase in vigour is productive of greater fecundity. Of course, where ewes are "flushed" by

extra food, the falling off in feeding value of the grass is corrected. Such grass as ewes are put on just before rutting should be fresh, that is, not fed by sheep recently. It is often noticed that a small number of ewes will give a heavier fall of lambs than a big flock. This is attributable to the fact that in most cases a small number will have better treatment and a greater range of fresh pasturage.

The ewes which go early to the ram are generally those which are kept largely on arable land, because arable cropping is necessary to carry the ewes and lambs; and the ewes get the advantage of stubble running, cabbages, rape, turnips, or other crops in addition to the grass. Moreover, they do not, as a rule, have a very long period between lambing and rutting; further, they have to act as scavengers after the young sheep, and so are not often in a position to get over fat. Those which are put on to the stubbles get what grain is shed during harvest, but this is a considerably lessened quantity in recent years, since hand-cutting has been deposed by the binder. It is well to remember this when stubbles are very clean, for there is then not so much to flush the ewes with.

Very poor ewes do not breed so freely as those in good, hardy condition, hence it is a great mistake to starve them at any time. Whilst admitting that ewes, after they have taken the ram, may be run hard for a little time, this should not be continued too long, because before lambing the ewe will have a special strain thrown upon her in building up the lamb or lambs she may be carrying. During the last month or two she must be provided with sufficient food for herself and lamb, for, if she approaches the natural lambing time too low in strength, she may be reduced in vigour more than is good for her, and the fœtus may be ill-fed, with the result that either nature steps in and causes her to expel it, or, if she goes full time, she may be unable to deliver the lamb. If she does struggle through, she will be unable to support her offspring, and there are few things in sheep keeping more worrying than a lambing pen with ewes short of milk. Warning is often given against having ewes too fat at lambing time, but, as a matter of fact, very few have had experience of this. A ewe can be in very good condition indeed without any difficulty being caused at lambing, and there certainly is no other objection. When the lamb is suckling there is no fear that she will remain over fat, the trouble then is to keep her in condition, for her strength is gradually being extracted in the form of milk, and if the ewe is in strong condition it will require less cake to keep up the milk supply. But some distinction should be drawn between sheep merely fat, through being fed too much on oily or starchy foods without a compensating share

of flesh makers, and those which are meaty and muscular. What is wanted is a ewe well fleshed and virile. When sheep receive only turnips they may keep up condition, but they are not in a vigorous breeding condition, as turnips alone do not supply all that is needed to maintain the health of the ewe and build up a lamb. To build up the lamb she has to draw too heavily on her system for the materials needed, and she is consequently weakened, with the result that she or the lamb must suffer. Yet turnips may safely be given, provided sufficient flesh-forming food is added—such as good clover hay, or any of the nitrogenous cakes, corn, etc. Starchy foods, with little nitrogen, are of little avail. They may fatten the ewe, but are of small use towards motherhood. Quite as good falls of lambs are obtained on arable land, where turnips or swedes form the main food of ewes, as on grass land, but in these cases dry food is given very early in the autumn, and this supplies what is needed. I mention this because it is so often held that ewes cannot do well if they do not get grass. Of course sheep breeding is much easier where grass is available because it contains both fat-making and frame-producing constituents fairly well proportioned according to the richness of the pasture.

Nitrogenous foods require to be used with care, especially in the case of sheep in preparation for the butcher, and great losses occur from the too free use of linseed cake and cotton cake at this time, although these are splendid foods where judiciously used. When fattening sheep on roots, linseed cake with clover hay makes not only an economical but a safe food, up to a certain point. These two combined counteract the injurious ingredient found in improperly matured swedes, which often gives rise to violent scour. But when they are given in excess they themselves cause scour, and not unfrequently death from a form of apoplexy. It is difficult to make breeders believe that a dietary, which is so excellent up to a certain stage, can ever be wrong. Yet many do recognise it, because when the sheep are upset they say they are making blood too fast, and they stop the cake, and sometimes bleed the sheep—probably the best thing they can do when such a stage has been reached. An ordinary sheep, with half a pound of linseed cake and up to one pound of clover hay a day, will give little trouble and much satisfaction. A fair-sized sheep will take ¾lb of cake, but with more than this quantity the sheep are always in danger. Shepherds know how often, although the sheep were to all appearances all right the last thing at night, one or more may be found dead in the morning, or would soon be if they were not bled. Bleeding is old-

fashioned, but in this case not to be despised, because the trouble is that the blood is too strongly azotised, and paralysis is setting in from too much pressure on the brain, and no other means of so quickly weakening the blood is available to the shepherd. The bowels may be relaxed, and medicines which contract the size of the corpuscles, used with advantage; but my personal experience has been that nothing is so useful in emergency as bleeding.

The whole matter resolves itself into one of feeding on an unbalanced dietary. Using half a pound of cake with hay and roots it is well balanced; even a little more is ordinarily safe, and would be quite safe if more starchy foods were added. This is shown by the fact that animals being prepared for show will take extraordinary weights of cake and corn or other starchy or sugary foods, and will not only not suffer but increase in weight rapidly. It is not necessary to go into the whole question of albuminoid ratios to demonstrate this. Sheep having no clover hay can take more linseed cake than those which have it because the relationship between the albuminoids and fat-formers is better balanced, but where clover hay is available it is highly valuable and tends to keep the sheep in health, besides being an economical food when produced on the farm. It is safe to say that there is nothing superior to clover or sainfoin hay as an additional food for sheep fattening on roots and, where possible, it should form part of every dietary, even though it be only ¼ to ½lb per day. Therefore, the nitrogenous cakes should be kept down rather than the hay withdrawn. When farmers "knock off the cake" they are giving the sheep a chance to correct the unhealthy condition of the blood, by keeping down the nitrogen supply and forcing the sheep to mainly exist on roots which contain little nitrogen, but whose feeding constituents are mainly starchy or sugary. It is much sounder feeding to arrange the food so that the sheep may improve rapidly and safely. When sheep scour it is an effort of nature to get rid of what is injurious, and they lose condition, in fact a bad case of scour is undoubtedly equal to the loss of at least one week's food. Many farmers recognise the danger of too much nitrogenous food, although all may not put it down definitely to the nitrogen, but their practice meets the case because in a rough and ready manner they balance the food better; or, as they say, they like plenty of mixture in their sheep food, and they mix together several things, such as cake, grittled cereals, peas, locust bean, etc., and so avoid the excess of nitrogen. Those who do this suffer few losses, although they feed high. There is nothing special in most of the advertised

lamb and sheep foods except that they, too, are a mixture of a considerable number of the different foods which the farmer handles; but they are arranged so as to give a low percentage of nitrogen, and are well suited for use by those who are not quite sure as to the proportions which should be observed. At any rate, there would be an enormous saving of lives of sheep and lambs, great saving from hindrances through intestinal troubles, and also in expense, if those who feed at high pressure were to add other foods when half a pound of linseed cake is given.

Stale keep and sheep-sick land are among the chief problems of the sheep-breeder. The two are somewhat allied, but there are points of difference. Stale keep is the new growth of a crop which has recently been fed by sheep, more particularly if winter has not intervened—for winter frosts are great, and almost always thorough, sweeteners. Clovers fed in summer and again in autumn are then stale; rape fed a second time before winter is stale; and so on. Lambs especially thrive ill when placed on stale food, and every sheep master recognises the difficulty of getting lambs quickly back to health when once they have gone wrong; hence, the necessity of good management to keep them healthy. Why a crop of clover fed off the first time should cause animals to thrive rapidly, while if it grows a second crop, in every way, so far as one can judge, as good as the first, they thrive slowly, has never been satisfactorily explained. We know, however, that animals of every kind prefer pasture which has not been manured a short time before by animals of a similar kind. A striking illustration of the value of the first feed of both white and red clovers, was shown many years ago at the Woburn Experimental Farm. In the rotation cropping, an acre was fed off by sheep, one lot receiving ½ lb. of cotton cake per day; another ½ lb of maize per day, and another no extra food; yet those without extra food always put on as much weight as those having cake or corn. In the second feeding, those having cake or corn would maintain the rate of increase they made on the first feeding, but those receiving nothing extra made little increase. It is evident that the special food acted somewhat as a corrective, also that clover, when coming into blossom, is so rich a food that there is no advantage in giving extra food. I was in charge of these experiments during the seven years referred to, and can vouch for the accuracy of the weighings. If there is no advantage in giving cake at this stage, how much cake is wasted in this way yearly?

Sheep-sick land is different from a stale crop. It has long been known that over-sheeping land makes it sheep sick: that is,

that sheep become unhealthy upon it, and generally this is attained more quickly on damp ground. The means of prevention have been to rest the land from sheep, though the agencies which directly affect sheep, and call for this resting, have only been recognised within recent years. Husk and liver-fluke, of course, have been recognised for many years; but there are other internal worms which were not known to exist in sheep until within the last few years, and these are accountable for a large portion of the sheep-keeper's troubles. The health and disease of sheep are, and doubtless have been for an incredible period, much controlled by these; but whilst the presence of these worms was unsuspected, and sheep were seen to ail and die, it is not surprising that the cause was often ascribed to what had nothing whatever to do with it. Many prejudices existed against concentrated manures previous to the present general and intelligent use of them. There is no doubt also that much sheep lore was erratic because of the conclusions drawn from the results which happened to synchronise with some chance change in feeding or treatment, and this strongly impressed observers. No ameliorative management or treatment has, however, been devised which renders it safe to over-stock land.

The chief losses are caused by small worms in the lungs and stomach, *Strongylus filaria* and *Strongylus rufescens* in the lungs, and *Haemonchus contortus*, *Strongylus cervicornis*, and *Strongylus gracilis* in the intestinal tract, apart from injury caused by the husk worm, tape worms, and liver fluke, and of those often obscure and almost mysterious epidemics, of which the sheep-keeper in many districts lives in constant dread. The Board of Agriculture, in reply to an inquiry, kindly informed me that as to the lung and stomach worms above mentioned, they are advised that there is no specific remedy for their cure, but that veterinary surgeons are treating sheep with marked benefit by methods which have been shown to be most successful in their districts. In support of this one does hear of treatments, mainly preventive, which are doing good, and now that there are so many highly trained veterinary surgeons in country districts, it would be wise if breeders would encourage them to devote their time and skill to the subject, and would call them in to attend their sheep, as they do in the case of their cattle and horses. A portion of the Development Fund would be well spent in investigating the conditions under which these internal parasites flourish and abound with a view to their extermination. Hardly any price is too heavy to pay for the removal of what is so prejudicial to the existence of the nearly 30,000,000 sheep in this country.

VII.—TOWN BOYS ON NEW ZEALAND FARMS.

By Thos. E. Sedgwick.

The Government of New Zealand has done well in showing, by means of a practical experiment, that town lads are admirably adapted for work on colonial farms, and how the best results may be achieved.

On being approached, on behalf of a Committee of Managers of Working Boys' Clubs and others interested in the emigration of surplus youthful labour from our manufacturing areas, the Government agreed to try fifty such lads, to adopt them as wards of the State, and to apprentice them to approved farmers under an agreement, the terms of which are given in the Appendix to this article.

The boys were selected from London and Liverpool, and were between the ages of 16 and 19; some came from comfortable home surroundings, and others were extremely poor. Some were in work at the time of their application, and others were in casual work or unemployed, but it was felt that it would be unjust to deny an opportunity to enjoy the splendid prospects of the Colonies to any lad because he had not "qualified" by being unemployed or a pauper, which is too often officially regarded in England as an essential qualification in those who are to be assisted to emigrate. In this connection, the present restrictions of the home Government do a great and undeserved injury both to the respectable worker and to the Colonies. It is frequently forgotten that every removal leaves the same amount of work available at home for another worker.

Each lad had the drawbacks of colonial farm life explained to him, and was made to realize what he had both to expect and to forego if he emigrated. A medical certificate, two good characters, a good previous record, and a written authority from his father for the Secretary of Labour at Wellington to act as his guardian and to apprentice him to a farmer were required in each case, and all were required to repay £10, the amount of the assisted passage money charged by the New Zealand Government. This was advanced from privately-subscribed funds, and a suitable outfit was given to each lad; this prevented their being dependent on charity, but without loading them with too heavy a debt. I accompanied the boys on their voyage and acted as superintendent.

On arriving in Wellington on January 24th, 1911, it was found that the Labour Department had selected and obtained reports on 60 of the most suitable of the 250 offers to take the boys, and each

was given his choice of sheep-farming, dairying, or fruit-growing in the North or South Islands. Parties were then made up and despatched in different directions under the care of officers of the Department.

The boys, from their former environments, were quick, active, and versatile, and learnt their work rapidly. The employers were so pleased that in many cases they doubled the wages they had offered before seeing the boys, and the average earnings of the boys are now 9s. to 10s. a week for the first year, 15s. to 22s. for the second year, and as much as 20s. to 23s. for the third year, with clothes, board, lodging, and instruction. In some cases the boys are given a clothing allowance of 5s. per week to provide their own clothes. Apprenticeship with the contingent banking of wages are the keynotes of success. The boys learn thrift, and at the end of a three years' apprenticeship they should have from £80 to £100 in the Bank.

The Dominion President of the Farmers' Union has written to say that a thousand more such boys are badly needed, but the extension of the movement is being hindered by the opposition of the Trade and Labour Party, who object to all forms of immigration. Other Colonies are, however, considering the questions of the adoption of the scheme for themselves, and of its extension to the apprenticeship of girls for domestic service.

The following extracts from letters from employers are given as showing the suitability of the lads for the work, and the readiness with which they have taken it up :—

"The boy is giving every satisfaction, and I am more than pleased with him. He seems to be most willing and anxious to learn the work, and appears to like it very much."

"The town lad allotted to me is a bright and intelligent lad, very willing to learn and eagerly looking for hard work in the way of fencing, wood-splitting, logging up and stumping. He was very quick in learning to ride and drive."

"The lad I have under me is in every way satisfactory. I find him honest, obliging, good-mannered, and very quick and anxious to learn. My opinion is that town lads given a fair chance and providing they wish to gain knowledge are just as good as country-bred boys."

"The lad is very intelligent, willing and eager to learn. Town lads, if they are not too old and have any inclination for the work, very soon adapt themselves to it. I have had some really good men from towns in the Old Country."

"Any town lad is equally as good as a country lad for farm work if he has a liking for a farming life, has the grit, and after he has been brushed up for a few weeks on a farm."

The boys' opinions of their life are equally satisfactory, as will be seen from the following extracts from their letters :—

"I have learned milking, harvesting, ploughing, fencing, hoeing, grubbing, digging, crutching (locking) and dipping sheep and fence cutting. . . . I am not thinking of going home for ten years. . . . The food is of the best."

"I feed the pigs and calves, bring in the cows, help to milk and separate, chop wood, have cleared ferns, dug "spuds," weeded and thinned the mangolds and carrots, fetch the bull in and feed him every night, and clean his box every morning. I am thoroughly satisfied with everything."

"I have learned a good deal in the way of sheep farming, and am getting a good rider now. New Zealand suits me up to the hilt."

"I have got a five-horse team to look after and drive. I can plough, harrow and disc harrow fairly well. I have ploughed [less than five months after arrival] a small paddock (field), cutting it into lands and headlands, and finishing if off by myself."

These extracts might be multiplied, but sufficient has been said to show that town boys who are anxious to go on the farm are pre-eminently adapted to the work, and their usefulness for housework must not be overlooked.

A correlative movement, started some years ago by Miss Iles, of East Clevedon Rectory, Somerset, to place younger London boys with farmers in the West, yielded similarly satisfactory results. Some farmers, however, require extra hands for a part of the year only, and as lads over eighteen cannot complete an apprenticeship of three years before attaining their majority, arrangements have been made with the representatives of certain Australian States to regard lads who have had six or more months' experience on farms at home as eligible for assisted passages as agricultural labourers. As these should embark in September or October, farmers could offer them employment from March or April on the basis of board, lodging, and experience, with, perhaps, 1s. a week pocket money and clothes, in return for their services, and innumerable lads would gladly avail themselves of the opportunity, if it were offered. In other cases, lads are being signed on to farms at home for a year, at the end of which time they are to be paid from £5 to £8, which will cover the cost of their reduced fare (£2 to £6) and outfit.

There is practically an unlimited supply of suitable lads. Included among them are the 4,000 telegraph boys who are annually dismissed from the public service on reaching the age limit of 16; a perhaps larger number of van boys who each year wish to get better prospects at the age of 17, since only one boy in ten can aspire to becoming a carman himself; and hosts of boys in offices, shops, warehouses, and manufactories, who are dismissed when they

wish for more than a boy's wage, and whose places are taken by others fresh from school.

The imperial spirited action of New Zealand in trying the experiment is most praiseworthy, and it is much to be hoped that the scheme may find such general support as will lead to its further extension.

APPENDIX.

MEMORANDUM OF AGREEMENT made this day of 1911, BETWEEN EDWARD TREGEAR, SECRETARY FOR LABOUR (hereinafter called "the Secretary"), on behalf of His Majesty the King, of the first part, lately arrived in the Dominion of New Zealand (hereinafter called "the Employee"), of the second part, and of , farmer (hereinafter called "the Employer"), of the third part, WHEREBY it is agreed by and between the parties as follows, that is to say:—

1.—In consideration of the agreements hereinafter mentioned on the part of the Secretary and the Employee, the Employer hereby agrees with the Secretary and with the Employee that he will employ the Employee upon his farm for a period of *three* years from the date of these presents at a wage of shillings per week during the first year, shillings per week during the second year, and shillings per week during the third year, payable as follows:— The sum of one shilling per week shall be paid to the employee for pocket-money, and the balance shall be paid monthly to the Secretary or his appointee upon trust for the purposes hereinafter mentioned.

2.—The Employer hereby further agrees with the Secretary and with the Employee that he will during the said term teach the Employee the business of , and maintain him with proper food, nourishment, lodging and clothes, and treat him with consideration and humanity, and shall grant the Employee reasonable facilities at least once on every Sunday to attend some place of Divine worship, according to the tenets of the religious persausion in which the Employee has been brought up, if there is any such within three miles from the residence of the Employer.

3.—In consideration of the above Agreement on the part of the Employer, and the Agreement hereinafter contained on the part of the Secretary, the Employee hereby agrees with the Secretary and with the Employer that he, the Employee, shall and will truly and faithfully serve the Employer during the said term, and conform to all his lawful and reasonable orders, and shall and will be honest, upright and diligent in the discharge of his duties. And that during the said term the Employer shall pay all wages earned by the Employee (with the exception of the sum of *One Shilling* per week hereinbefore mentioned) to the Secretary or his appointee, such wages to be retained by the Secretary or his appointee, firstly in payment of the amount of *Ten Pounds*, which is hereby acknowledged due by the Employee to the Secretary in respect of moneys advanced for the employee's passage to, and expenses incurred on arrival in, New Zealand; and secondly, in trust for the Employee

to be paid to him upon his attaining the age of twenty-one years, or sooner, in the discretion of the Secretary.

4.—And it is hereby further agreed that the Employer shall have the right at any time during the said term, if the employee is guilty of such misconduct as would lawfully justify a master in dismissing a servant, or for any other reason which appears good and sufficient to the Secretary, to dismiss the Employee; but in any case the Employer shall give at least fourteen clear days' previous notice in writing of such dismissal, and of the cause thereof to the Secretary: Providing that if the misconduct is of such a nature as to justify instant dismissal, notice of same shall be given to the Secretary within three days.

AND it is hereby further agreed between the parties hereto that the Secretary shall have power to appoint from time to time some person who shall have authority to visit the Employee at all reasonable times and to inquire as to whether he is being well treated and as to whether the employer is abiding by the agreement hereinbefore made by him; and if at any time during the said term in the opinion of such person the Employer is not abiding by the terms of the said Agreement, or any of them, or is not properly treating the Employee, it shall be lawful for the Secretary to terminate this Agreement and to withdraw the Employee from the service of the Employer, and the Employer shall have no redress or remedy whatever for such withdrawal or loss of service.

In witness whereof the parties hereto have hereunto subscribed their names on the day and year first above written.

Signed by the said Edward Tregear,
on behalf of His Majesty the King,
in the presence of
Signed by the said
in the presence of
Signed by the said
in the presence of

VIII.—ANNUAL REPORT UPON THE SOCIETY'S GENERAL OPERATIONS.

By Thos. F. Plowman, Secretary and Editor.

The accompanying Report, having been received and adopted at a meeting of the Council, held on June 1st, 1911, was submitted to the Annual General Meeting of Members, held on the following day in the Show yard at Cardiff, and, on the motion of the Marquis of Bath, seconded by Mr. E. C. Dulcken, was approved, and ordered to be printed in the Society's Annual Journal:—

"In presenting their Annual Report, the Council have much pleasure in announcing that his Majesty the King has graciously

consented to become the Society's Patron. The Council feel assured that the members generally will deeply appreciate this distinguished mark of Royal favour and the great honour thereby conferred upon the Society.

"The Council congratulate the members upon meeting once more in the capital of the Principality, where on two previous occasions, in 1882 and in 1898, they have received a hearty welcome. This has been repeated on the present occasion, and the thanks of the Society are due to the Local Committee for their efforts to make the Show a success.

"The exhibition is a large one, and a comparison of the number of entries with that when the Society last visited Cardiff is an indication of the growth of the Society in the interval. In 1898 the entries of Live Stock and Produce numbered 1,562; in 1911 they are 1,837, whilst there has been a considerable increase in the space required for implements and machinery. These figures are the more remarkable from the fact that in the Live Stock classes the Society has in recent years limited the number of entries an exhibitor can make in one class, and has also adopted a more restrictive policy than formerly with respect to the nature of the exhibits in the Implement section of the Show.

"The interest taken in the Nature Study Exhibitions previously held by the Society, and the general concensus of opinion as to their usefulness, induced the Council to continue the series. The exhibition is confined to educational bodies in Wales and the adjoining counties, and this has resulted in the gathering together of a very interesting and instructive collection.

"In view of the importance of Forestry to the country at large, and of the national benefits likely to accrue from systematic investigation of matters pertaining to it, the Council. six years ago, determined to invite the co-operation of corporate bodies and private landowners in carrying out an exhibition illustrative of the subject. The success which attended this and succeeding exhibitions afforded every encouragement to continue them, and the Council have been enabled to add this very interesting feature to the other attractions of the present Show.

"The Council have not limited their attention to the Annual Show, but, when opportunity has offered, have lent their support to various objects for the advancement of agriculture and kindred industries. Foremost among these is the National Fruit and Cider Institute, the establishment of which was due to the practical and scientific research work initiated and conducted for some years, conjointly by the Society and the Board of Agriculture, at Butleigh,

and to which the Society makes an annual grant of £100. Experimental and research work is being actively carried on at the Institute, which there is every reason to believe is of essential service to those engaged in cider-making and fruit-growing. An arrangement has been made under which members of the Society can obtain from the Institute, free of charge, analyses of cider apples and perry pears.

"The Institute has also undertaken to distribute to the Society, or to persons nominated by it, free of charge, a selection of trees which have been worked with the best varieties of cider apples and perry pears, and has conferred upon the Society the privilege of nominating one student, free of all fees, for a course of instruction in the theory and practice of fruit growing, cider-making, etc., to be held by the Institute at the University of Bristol.

"The Council have re-appointed Mr. H. B. Napier, whose term of office had expired, as a Representative Governor of the Institute.

"With a view to assisting farmers and others in dealing with insect and other pests which affect agriculture, horticulture, etc., the Council have accepted an offer from the Board of Economic Biology of Bristol University, to investigate the nature of any insect or other pest and report upon it free of charge.

"The Council, at the invitation of an Agricultural Conference organised by the British Science Guild, have joined in a memorial to the Prime Minister pointing out to his Majesty's Government the urgency of granting adequate assistance for the continuous conduct of scientific investigations having for their object the development of agricultural production.

"The Council, having been invited by the Departmental Committee on the British Export Trade in Live Stock to nominate one of its members to place the views of the Society before the Committee, requested Mr. H. B. Napier to represent the Society.

"The Departmental Committee on Swine Fever, having expressed their willingness to receive evidence from the Society bearing on the subject of the inquiry, the Council appointed Mr. C. Bathurst, M.P., to give such evidence.

"The Departmental Committee appointed to consider and report upon the position of tenant farmers on the occasion of change in the ownership of their holdings having invited the Society to nominate one of its members to place the views of the Society before that Committee, your Council have appointed a Special Committee to consider and report upon the subject in question, so that the views expressed by the Society's representative may be in accord with those held, so far as can be ascertained, by the Society generally.

"The Council, having taken into consideration a scheme, formulated by a Special Committee of the Hunters' Improvement Society with a view to developing the industry of breeding light horses in the United Kingdom, have felt able to co-operate with the Society named in urging upon the Board of Agriculture the desirability of steps being taken to put the scheme into force.

"The Council have had under serious consideration the position in which the Society finds itself owing to the Royal Agricultural Society coming at short intervals into the area embraced by the Bath and West Society. This places the latter Society at a considerable disadvantage with respect to both its present and future, inasmuch as the cities or towns visited by the Royal Society are among the comparatively few at which the Bath Society can hold its annual Show without risk of a drain upon its funds. Your Council would, therefore, at this critical juncture, earnestly urge all members of the Society to give it all the support they can, and to induce others to do so, so that it may be enabled to continue unimpaired the work which, for nearly one hundred and fifty years, it has successfully carried on for the benefit of Agriculture.

"The Council regret that during the past year death has deprived the Society of several old and valued supporters and workers, foremost among them being Mr. C. R. Collins, a Vice-President, and for the last fourteen years Chairman of Finance. In the latter capacity he rendered, up to the very last, continuous and unwearied service on behalf of the old Society he loved so well, whilst his devotion to its interests was accompanied by a geniality, a kindliness, and a gentleness which attracted the affectionate regard of all associated with him. Among other good friends of the Society who have recently passed away have been Mr. W. P. Vosper, who had been long and honourably identified with the Stock Prize Sheet Committee especially, by whom his practical knowledge and experience as a successful breeder were always valued; and Mr. E. T. D. Foxcroft, an old and staunch supporter of the Society, for long a member of Council and held in high esteem by all who knew him.

"Within the last few days the Society's ranks have been still further thinned by the death of another of its Vice-Presidents, Mr. N. Story-Maskelyne, F.R.S., who, until prevented by ill-health, was an active promoter of the experimental-research section, especially, of the Society's work. He also took a great interest in dairying, in its practical as well as in its scientific aspect, and the first travelling Butter School, of the many the Society carried on, was held at his suggestion, and under his auspices, at Swindon. The Society generally and the Committee upon which he served in

particular were indeed fortunate in having the help of one so distinguished in attainments and who was always so willing to place his large store of knowledge at their disposal.

"Early in the present year, the Society experienced a serious loss in the death of Mr. James Rossiter, who, as its Superintendent of Works, earned and received the complete trust and confidence of those whom he served by the faithfulness and ability with which, for nearly thirty years, he discharged the duties of his office. Whilst his long experience was of great value to the Society, his conscientiousness, his tact, and his courtesy, won for him also the regard of the many exhibitors and others who came into personal communication with him in connection with the Works Department.

"As the vacancy occurred on the eve of the commencement of the building of the Cardiff Show Yard, it was temporarily filled by the appointment of Mr. H. C. Ayre, who had acted as Foreman of Works under Mr. Rossiter, and had enjoyed his full confidence, and the Council have had no reason to regret the entrusting to him of this responsibility. The Council desire to take this opportunity of expressing the Society's indebtedness to the Chairman of the Works Committee, Mr. Edwards, and to Mr. Napier, a former Steward of Works, who, at considerable personal inconvenience, have made several journeys to Cardiff and cheerfully devoted much time and trouble in order to help, by their advice and assistance, the carrying out of the Show Yard work.

"Five extraordinary vacancies in the Council have been filled up by the appointment of the Earl of Devon, Sir H. H. A. Hoare, Bart., Mr. C. Bathurst, M.P., Mr. A. Allsebrook, and Mr. W. H. Clark.

"The Council have much pleasure in recommending that the Marquis of Bath be elected President for the ensuing year; that the Marquis of Bute be elected a Vice-President of the Society, in recognition of his services as President; and that the gentlemen named on the Agenda Paper be elected members of Council for the years 1911-13, in the room of those retiring by rotation.

"The Council have accepted a cordial invitation from the City of Bath for the Society to hold its 1912 meeting there, and they have much pleasure in adding that the Somerset County Agricultural Association has resolved to suspend its Show for that year and to join with the Bath and West Society; a course which your Council feel assured will be fully appreciated by the members of this Society."

IX.—THE SOCIETY'S EXHIBITION AT CARDIFF.

By Thos. F. Plowman, Secretary and Editor.

The Society's 1911 Exhibition at Cardiff was opened on Wednesday, May 31, and closed on Whit-Monday, June 5.

A plan showing the situation and arrangement of the Yard faces this page.

Entries.

The following is a comparative statement of the entries in the Stock and Produce Classes in 1882, 1898 and 1911.

	Cardiff 1882		Cardiff, 1898.		Cardiff, 1911.	
Horses :—						
Agricultural and Colliery	28		68		42	
Hunters, Hacks, Ponies and Harness	129		124		302	
	—	157	—	192	—	344
Cattle :—						
Devons	23		42		36	
South Devons	0		0		18	
Shorthorns	78		55		87	
Hereford	58		45		67	
Sussex	24		22		20	
Jersey	36		99		108	
Guernsey	29		66		37	
Welsh Black	36		18		15	
Aberdeen-Angus	0		8		18	
Kerry and Dexter	0		25		37	
Dairy	7		33		32	
	—	291	—	413	—	465
Sheep..		171		151		189
Pigs		98		101		97
Poultry		479		440		488
Farm Produce :—						
Cheese	0		97		59	
Cream Cheese, Butter and Cream ..	0		124		128	
Cider	0		44		67	
	—	0	—	265	—	254
		1,196		1,562		1,837

A list of the Awards, names of the Judges, etc., will be found on pages *i* to *xci* of the Appendix to this volume.

Prizes.

The money prizes in 1911 were contributed as follows :—

	£	s.	d.
Bath and West and Southern Counties Society ..	2,796	15	0
Cardiff Local Committee	195	0	0
Monmouthshire Agricultural Education Committee ..	58	10	0
Shire Horse Society (or Medal)	15	0	0
Hackney Horse Society (or Medal)	5	0	0
Lord Tredegar	12	0	0
Welsh Pony and Cob Society	10	0	0
Bedwellty Agricultural Society	25	0	0
Cardiff May Day Show Society	32	0	0
Glamorgan Agricultural Auxiliary Fund Committee ..	33	0	0
Devon Cattle Breeders' Society	10	0	0
South Devon Herd Book Society	17	0	0
Shorthorn Society	20	0	0
Dairy Shorthorn (Coates's Herd Book) Association ..	10	0	0
Hereford Herd Book Society	20	0	0
Welsh Black Cattle Society	30	0	0
English Aberdeen-Angus Cattle Association ..	10	0	0
English Jersey Cattle Society (or Medals)	29	0	0
English Kerry and Dexter Cattle Society	20	0	0
Cotswold Sheep Breeders' Society..	11	0	0
Devon Longwoolled Sheep Breeders' Society ..	10	0	0
Kent or Romney Marsh Sheep Breeders' Association	17	0	0
Southdown Sheep Society	17	0	0
Hampshire Down Sheep Breeders' Association ..	10	0	0
Oxford Down Sheep Breeders' Association ..	10	0	0
Dorset Down Sheep Breeders' Association ..	20	0	0
Exmoor Horn Sheep Breeders' Association ..	17	0	0
Ryeland Flock Book Society (Ltd.)	10	0	0
British Berkshire Society	5	0	0
Large Black Pig Society	12	0	0
	£3,487	5	0

Gold, Silver and Bronze Medals were also given by the Society and Medals or Plate by the Shire Horse Society, the Hunters' Improvement Society, the Hackney Horse Society, the Polo and Riding Pony Society, the Welsh Pony and Cob Society, the Sussex Herd Book Society, the Aberdeen Angus Cattle Society, the English Aberdeen Angus Cattle Association, the English Jersey Cattle Society, the English Guernsey Cattle Society, B. de Bertodano, Esq., the English Kerry and Dexter Cattle Society, the Southdown Sheep Society, the National Pig Breeders' Association, Messrs. Chas. and Thos. Harris & Co (Ltd.), and the Poultry Club.

Implements.

The following is a comparative statement of the number of feet run of shedding provided for Implements, machinery, etc., and of the number of square feet of open space occupied by exhibits unsuitable for shedding :—

		Cardiff, 1882.	Cardiff, 1898.	Cardiff, 1911.
Machinery in Motion ..	.. feet run	812	1,120	1,694
Agricultural and General Implements and Vehicles	.. "	5,122	4,635	3,950
Seeds, Cattle Foods, Artificial Manures, &c.	.. "	727	875	1,153
		6,661	6,630	6,797
Open space for Farm and Horticultural Buildings, &c. ..	..square feet	10,575	15,092	35,563
		17,236	21,722	42,360

MISCELLANEOUS DEPARTMENTS.

Nature Study and Forestry exhibitions (particulars of which are given on pages 88 to 92), were again noteworthy features of the Show, and excited much interest.

Near the Forestry Gallery demonstrations of tree pruning and grafting were given each morning by Mr J. Ettle, F.R.H.S.

A fully equipped Working Dairy, in which the Buttermaking Competitions were held, formed, as usual, a prominent feature of the Show. Here various dairy implements and appliances, including power and hand separators, were shown at work, and the best methods of making butter and clotted cream were practically demonstrated.

There were also Bee-keeping demonstrations and Shoeing, Milking, Timbering and Splicing Competitions, the following being a comparative statement of the entries :—

	Cardiff, 1898	Cardiff, 1911.
Butter-Making	103	309
Shoeing	81	111
Milking	17	40
Timbering and Splicing	0	26
	201	486

The Show was inaugurated on the opening day by the Lord Mayor of Cardiff, who attended in State, accompanied by the

members of his Corporation and the Local Committee. They were received by the Marquis of Bath (acting on behalf of the President), and the members of the Council of the Society.

Musical performances were given daily by the Band of the Royal Marine Light Infantry (Chatham Division), under the conductorship of Mr. Chas. Hoby, A.R.C.M., L.R.A.M.

The usual Sunday service, at which there was a large attendance of herdsmen and others engaged in the Yard, was held around the bandstand, from which the sermon was preached by the Lord Bishop of Llandaff. The service was conducted by the Society's Chaplain (the Rev. A. T. Boscawen), who was assisted by the Rev. A. Henderson, Vicar of St. John's, in whose parish the Show yard was situated. The surpliced choir from St. James's Church kindly attended the service, and led the singing, taking up their position, with the clergy, in the Bandstand, where an improvised rostrum and pulpit had been draped with the Union Jack. The lessons were read by Lord Wynford, and the accompaniments were played on an American organ by the organist of St. James's Church.

Reference must again be made to the kindly thought of the Young Men's Christian Association, who, having space in the Showyard placed at their disposal by the Stewards, provided a reading and writing tent for the special use of those engaged in looking after the stock, etc., in the Yard. The Association gave little entertainments and addresses here in the evening, and these and the other advantages provided were thoroughly appreciated by those for whom they were intended.

Attendance.

The first of the following tabular statements refers to the number of persons who paid for admission to the Showyard, and the second to the admission receipts.

Number of Admissions.	Exeter, 1909.	Rochester and Chatham, 1910.	Cardiff 1911.
At 7*s.* 6*d.* (Season Tickets)	122	217	161
" 2*s.* 6*d.*	13,128	5.273	15 285
" 1*s.*	38.569	17.815	38 413
" 6*d.*	4.970	2,692	2,942
Total	56.789	25.997	56,801

Receipts.	Exeter, 1909. £ s. d.	Rochester and Chatham, 1910. £ s. d.	Cardiff, 1911. £ s. d.
Show Yard	3,739 9 0	1,698 11 0	3,965 4 0
Horse Ring Stand	421 4 0	202 1 3	417 4 6
Working Dairy	3 10 9	2 4 9	8 10 6
	4,164 3 9	1,902 17 0	4,390 19 0

X.—THE MILK-TEST CLASSES AT THE CARDIFF EXHIBITION.

By Dr. J. A. Voelcker, M.A., F.I.C., Consulting Chemist to the Society.

The conditions in 1911 were the same as in previous years. The number of entries was 16, and 14 cows actually went through the test as compared with 16 at Rochester in 1910.

The cows were stripped clean on the evening of Thursday, June 1st, when they were weighed and divided, as usual, into two Classes, viz., Light-Weights (under 900lbs. live weight) and Heavy-Weights (over 900lbs. live weight).

The light-weight class comprised eight animals, all of them being Jerseys; the heavy-weight class consisted of six cows, three being Jerseys, two Lincoln Red Shorthorns, and one a cross-bred cow.

The morning's and evening's milk of Friday, June 2nd, were taken for the tests, samples of these being drawn and subsequently analysed.

Of the whole number of competing animals, only two, namely, Nos. 375 and 536, were disqualified because their milk was deficient in quality. These disqualifications occurred one in each of the two Classes, and it is satisfactory to know that there was evidence, in each case, of the cow in question not being well on the day of the test.

In the light-weight class the 1st Prize was awarded to Mr. J. H. Smith-Barry's "Caprice," the same cow having won the similar competition at Rochester in 1910, and at Exeter in 1909, as well as obtaining the 1st Prize at the Liverpool Show of the Royal Agritural Society in 1910. On each of these occasions this cow also

gained the Gold Medal of the English Jersey Cattle Society. The total number of points secured by "Caprice" were at Cardiff 58, at Rochester 57·85, and at Exeter 57·75 respectively. This must surely constitute a record for consistency.

Mr. J. H. Smith-Barry's cow, "Malvoisie," gained the 3rd Prize in this Light-weight Class, with 51·25 points. She had obtained the 2nd Prize at Rochester in 1910, with 51·07 points.

Mr. Smith-Barry's two cows were separated in the Prize List by Mr. R. Bruce Ward's "Ida 5th," which had been placed third at Rochester. It now obtained 2nd Prize with 51·87 points.

In the heavy-weight class the 1st Prize was won by Mr. G. W. Stark's cross-bred "Nancy," a nine-year-old cow, which had competed previously at Dorchester, 1908, and at Exeter, 1909, but on each of these occasions, had given milk which was deficient in quality. "Nancy" now just complied with the requirements, and, with 63·65 points, gained the 1st Prize.

The 2nd Prize was won by Mr. J. Evens' Lincoln Red Shorthorn, "Burton Amy," a cow over nine years old, which had been placed third in its class at Rochester in 1910.

The 3rd Prize went to Lord Rothschild's Jersey cow, "Catherine," with 55·85 points.

Full particulars of the tests, analyses, etc., are given in the accompanying Table.

MILK-TEST CLASSES.

No. in Catalogue.	Owner and Cow.	Breed.	Age.	No. of Days in Milk.	Quantity of Milk. Morning.		Evening.		Total.	
			Years		lbs.	oz.	lbs.	oz.	lbs.	oz.
	CLASS 131. Cows under 900 lbs. live weight.									
539	Mr. J. H. Smith-Barry's "Caprice" ..	Jersey	6	145	26	8	21	0	47	8
542	Mr. R. Bruce Ward's "Ida 5th" ..	"	5¾	187	22	6	17	8	39	14
538	Mr. J. H. Smith-Barry's "Malvoisie" ..	"	5¾	178	21	14	17	6	39	4
384	Mr. A. Pocock's "Freegrove Lily" ..	"	6½	66	26	10	17	8	44	2
369	Mr. J. Joicey's "Jurata" . ..	"	5	42	26	10	19	4	45	14
389	Lady Smyth's "Walcombe Scarstone"	"	10	130	19	10	14	12	34	6
393	Sir J. Wernher, Bart.'s, "Neatness" ..	"	6½	71	20	4	13	8	33	12
375	Mr. J. H. Smith-Barry's "Post Obit" ..	"	7	114	26	10	24	12	51	6
	CLASS 132. Cows 900 lbs. live weight or over.									
541	Mr. G. W. Stark's "Nancy"	Cross	9	139	30	14	22	14	53	12
535	Mr. J. Evens' "Burton Amy"	Lincoln Red	9¼	35	34	14	25	0	59	14
385	Lord Rothschild's "Catherine"	Jersey	5¼	126	30	10	16	10	47	4
387	Lord Rothschild's "Kenta"	"	6¼	28	28	4	22	2	50	6
370	Mr. McIntosh's "Havering Carnatie 11th"	"	5	126	15	8	10	10	26	2
536	Mr. J. Evens' "Burton Chance 8th" ..	Lincoln Red	6¼	37	34	6	27	8	61	14

MILK-TEST CLASSES.

Quality of Milk.				No. of Points for Milk.	No. of Points for Lactation.	Total No. of Points.	Awards
Morning.		Evening.					
Fat.	Solids.	Fat.	Solids.				
per cent.	per cent.	per cent.	per cent.				
3.6	13.03	4.25	13 34	47.50	10.50	58.00	First Prize.
3.4	12.27	4.2	13.29	39.87	12.00	51.87	Second Prize.
4.1	13.28	5.10	14.14	39.25	12.00	51.25	Third Prize.
4.25	13.31	4.4	13.68	44.12	2.60	46.72	Reserve and C.
3.8	12.85	4.75	13.88	45.87	.20	46 07	C.
4.5	14.07	6.1	15.65	34.37	9.00	43.37	C.
4.35	13.63	5.2	14.83	33.75	3.10	36 85	
2.15	11.45	4.6	13.51	51.37	7.40	58.77	Deficient in quality.
3.0	12.05	3.40	12.54	53.75	9.90	63.65	First Prize.
3.4	12.26	4.0	13.14	59.87	nil	59.87	Second Prize.
5.0	13.89	7.5	16.65	47.25	8.60	55.85	Third Prize.
3.2	12.35	5.25	14.43	50.37	nil	50.37	Reserve and H. C.
4.6	13.83	5.55	14.89	26.12	8.60	34.72	
2.95	11.88	3.55	12.74	61.87	1.70	63.57	Deficient in quality.

XI.—THE BUTTER-TEST CLASSES AT THE CARDIFF EXHIBITION.

By Ernest Mathews.

Out of an entry of sixteen animals, fourteen, all of which were Jerseys, arrived in the show-ground at Cardiff to compete for the English Jersey Cattle Society's medals, the prizes this year being only offered for cattle entered or eligible for entry in the Jersey Herd Book.

The cows were stripped at 4.50 p.m. on Thursday evening, June 1st, the milk of the next twenty-four hours being taken for the test. Immediately after the cows were milked separation took place both morning and evening, as with the abnormal heat it would have been unsafe to leave the morning milk untouched during the day. Churning took place on Saturday morning, and the awards were published by mid-day. The following is a list of the prize-winners:

	Days in Milk.	Weight of Butter. lb.	oz.	Points.
Gold Medal, Lord Rothschild's *Catherine*	126	2	14	54.60
Silver „ Mr. J. H. Smith-Barry's *Malvoisie*	178	2	0¼	44.25
Bronze „ Mr. J. H. Smith-Barry's *Caprice*	145	1	15¾	42.00

Four certificates of merit were also awarded.

The averages of the cattle are as below:—

No. of Cows.	Days in Milk.	Milk. lbs. ozs.	Butter. lbs. ozs.	Ratio. lb.	Points.
14	118	37 6½	1 13	20.63	36.60

The arrangements made by the Bath and West Society were excellent, and my thanks are due to Mr. Somerville, the steward, and to Mrs. Luke, and Miss Kirke.

CLASS 133.—COW ELIGIBLE FOR OR ENTERED IN THE ENGLISH JERSEY HERD BOOK.

No. in Catalogue.	Exhibitor.	Name of Cow.	Date of Birth.	Date of Last Calf	No. of Days in Milk.	Milk Yield. lb. oz.	Butter Yield. lb. oz.	Butter Ratio.	Points for Butter.	Points for Lactation.	Total Number of Points.	Awards.
370	Mrs. McIntosh ..	Havering Carnatie 11th ..	.. Apl. 17, 1906	Jan. 27, 1911	126	26 2	1 6¼	18.78	22.25	8.60	30.85	—
375	J. H. Smith-Barry	Post Obit ..	.. Mar. 23, 1904	Feb. 8, 1911	114	51 6	1 12¼	29.09	28.25	7.40	35.65	Certificate of Merit.
384	A. Pocock ..	Freegrove Lily	.. Jan. 25, 1905	Mar. 28, 1911	66	44 2	2 1¼	21.23	33.25	2.60	35.85	Certificate of Merit.
385	Lord Rothschild ..	Catherine ..	.. Mar. 1, 1906	Jan. 27, 1911	126	47 4	2 14	16.43	46.00	8.60	54.60	Gold Medal.
387	Lord Rothschild ..	Kenta ..	.. Mar. 6, 1905	May 5, 1911	28	50 6	1 15¼	25.70	31.25	nil	31.25	—
389	Lady Smith ..	Walcombe Starstone	June 16, 1901	Jan. 23, 1911	130	34 6	1 15¼	17.32	31.75	9.00	40 75	Certificate of Merit and £1 Butter Prize
393	Sir J. Wernher ..	Neatness ..	.. Dec. 8, 1904	Mar. 23, 1911	71	33 12	1 12¾	18.78	28.75	3.10	31.85	—
538	J. H. Smith-Barry	Malvoisie ..	.. Aug 12, 1905	Dec. 6, 1911	178	39 4	2 0¼	19.47	32.25	12.00	44.25	Silver Medal.
539	J. H. Smith-Barry	Caprice ..	.. July 28, 1905	Jan. 8, 1911	145	47 8	1 15¼	24.12	31.50	10.50	42.00	Bronze Medal
542	R. Bruce Ward ..	Ida 5th ..	.. Sept., 1905	Nov. 27, 1910	187	39 14	1 6¼	28.04	22.75	12.00	34.75	—
543	G. W. Stark ..	Snowdrop ..	.. Dec. 31, 1902	Mar. 2, 1910	92	32 4	1 11	19.11	27.00	5.20	32.20	—
544	H. P. Sturgis ..	Cinder Pearl	.. June 14, 1906	Dec. 13, 1910	171	16 6	0 13¾	19 05	13.75	12.00	25.75	—
545	C. Thellusson ..	Golden Lucy..	.. Aug. 26, 1904	Jan. 16, 1910	137	30 12	1 8	20.50	24.00	9.70	33.70	—
546	Mrs. Evelyn ..	Record 3rd ..	.. Oct. 7, 1906	Mar. 12, 1910	82	30 4	2 2¾	13.92	34.75	4.20	38.95	Certificate of Merit.

XII.—THE SOCIETY'S NATURE STUDY EXHIBITION.

By H. M. Cundall, I.S.O., F.S.A., Steward.

A Nature Study Exhibition has been held annually in connection with the Society's Shows for the past ten years. These exhibitions have undoubtedly proved not only to be of general interest to the visitors, but have also been a means of helping the promotion of a knowledge of Nature amongst the children in rural districts, by giving their teachers an opportunity of seeing the various methods of instruction used in schools other than their own.

Although somewhat restricted in extent, the Exhibition at Cardiff was of considerable educational value. It was greatly to be regretted, however, that the Education Committee of the Glamorgan County Council, after having made application for space, suddenly withdrew at the last moment, without giving any reason for their action. Consequently, there was no collective exhibit of students' works from the schools in the county in which the Society's Show was held, like that so admirably arranged by the Kent Education Committee at the Society's previous Show at Rochester. Fortunately, the University College of South Wales and Monmouthshire came to the rescue and filled up the gap, by contributing a highly educational and interesting collection of exhibits, consisting of appliances and apparatus used by the Professors of Agricultural Instruction in connection with the College. The collection comprised specimens of Zoology, Botany, Geology, Dairy Bacteriology, Agricultural Survey and Mensuration, Veterinary Hygiene, Agricultural Practice and Dairy Technology. The University College also sent some very remarkable illustrations of the adulteration of artificial manures with insoluble materials of no use whatever to plants, thus clearly demonstrating the fallacy of buying manures on the results of an incomplete chemical analysis. The large number of materials thus used as adulterants were shown separately.

Great interest was taken in the germination test for barley to determine its malting value and the results of these tests, as illustrated by actual examples of good and poor malting barley, were carefully examined. The best thanks of the Society are due to all the Professors, who so readily came forward to arrange their individual sections of this most instructive display.

The exhibit from Cardiff City Museum was one of the most interesting in the Nature Study Section.

Each of the separate cases contained a complete life history of

one injurious insect. Actual specimens of the insects were shown at various stages of their development: enlarged drawings of the insects were added, and excellent coloured models in wax and fabric of the root, stem, twigs and leaves of the plant when attacked. The printed text in each case not only described the ravages of the insect but also the best means of dealing with the pest.

Turnip Fly, Bean Aphis, Clover Weavil, Pine Shoot Tortrix Moth, Colorado Beetle, Currant Blister Aphis, White Butterflies, Ash Bark Beetle and other enemies of agriculturalists were represented in this complete manner.

The Reptile Cases from the same Museum were of more than usual interest. The British Lizards and the poisonous and harmless snakes (which were shown in spirit preparations) were admirably arranged so as to contrast the snakes and to illustrate their characteristics. The stages of development of the Ring Snake from egg to full grown snake were presented in one jar, while a second jar illustrated the method of existence of young adders in the ovi-duct of their parent, the discovery of which has led to the common error that the adder swallows her young when in difficulties.

The Royal Botanic Gardens, Kew, contributed a collection of specimens of common trees and shrubs, each represented by a summer shoot, a winter shoot, flowers, and, where possible, fruits. These mounted on stiff cardboard are prepared for use in Elementary Schools.

The Cooper Research Laboratory, Berkhampstead, sent a collection of injurious insects, which infest animals and vegetables.

Under Group B.—(*a*) *Secondary Schools* (*Public and Private*); *Intermediate Schools*; (*b*) *Evening or Continuation Schools*; (*c*) *Primary Day and Preparatory Schools, including Higher Elementary and Higher Grade Schools* (*Public and Private*); (*d*) *Home Office and Workhouse Schools*—the Newport Elementary Education Committee organised a collective and representative exhibit, demonstrating the manner in which Nature Study is taught in the schools under their control. Examples of the work executed by pupils in the following schools were shown:—Alexandra Boys', Girls' and Infants; Central Mixed; Church Road Girls'; Eveswell Boys' and Girls'; Maindee Boys', Girls' and Infants'; St. Woollos Boys' and Girls'; and Spring Gardens Girls' and Infants'. The results were extremely good and the clever drawings of many of the pupils were evidence of sound instruction.

The Rhondda Education Committee contributed some pupils' work from Dunraven, Ynyswen, Treherbert and Llwyncelyn Schools. The Pembroke Education Authority sent a collection

of specimens showing the life history of moths, butterflies, and other insects, etc.; and of woodwork done in the day and evening continuation classes of the Barham Memorial School, Letterston. The models were mostly of the kind that a country boy should make for use in the garden, and illustrated the decidedly agricultural bent which should be given to a course of handicraft in a rural school. The Merthyr Tydfil Education Authority showed specimens of embroidery and woodcarving executed by the students of the evening and technical classes. The designs were based on plant life, and were indirectly the results of nature study.

Some excellent nature study drawings were exhibited by Bishop Fox's Girls' High School, Taunton; St. John's Primary Boys' School, Weston-super-Mare; and Oldfield Boys' Council School, Bath.

XIII THE SOCIETY'S FORESTRY EXHIBITION.

By G. Lipscomb, Steward.

The Forestry Section at Cardiff was noticeable for the excellence of several of the general exhibits and the appreciation by the public of the practical demonstrations in fruit-tree pruning. The Society are indebted to Mr. Ettle, of the National Fruit and Cider Institute, Long Ashton, for the way in which, at the request of the Forestry Committee, he carried out an excellent series of demonstrations in the pruning of fruit trees, which were always well attended. This branch of the Society's activity appears to be fully justified, and to be a very useful addition to the educational side of the Forestry Section.

The general exhibits in Class 1 were, on the whole, better than at any previous Bath and West Forestry Exhibition, and proved not only that many landowners are alive to the value of these exhibitions, which year after year by practical examples point out the difference between good and bad forestry, but also that estate foresters are keenly co-operating and are taking considerable care in the collection and preparation of specimens.

While, however, the general exhibits were better than usual, it was a matter for regret that the boards exhibited were, with few exceptions, and especially in the hard wood classes, poor, and not up to the usual standard, and though, from an educational point of view, a bad exhibit may be an object lesson, still one was sorry not to see better boards. The explanation is to be found partly in the

fact that to obtain first-rate boards suitable for exhibition, it frequently happens that many trees have to be felled and cut up, and this is not always convenient. One forester told me that he had been so busy making Coronation bonfires that he had not been able to send any exhibit at all ! It is to be hoped that the weakness in the classes for boards will be remedied in future.

The feature of Class 1 was, as usual, the really excellent collection sent by the Duke of Wellington, who again took the Gold Medal. Well prepared, well staged, and highly instructive, it touched upon almost every department of forestry. The great labour involved in bringing together an exhibit of this kind is not always realised by the outside public.

The Silver Medal in this class was taken by Dame E. F. Smyth, with an excellent exhibit comprising some beautiful photographs, a plan and particulars of a creosoting tank, a collection of larvæ, etc., carefully indexed, specimens of various woods, and an interesting comparison between larch (European) and Wellingtonia. Both these were planted in 1867 in shallow soil on carboniferous limestone: the former when felled measured 43, and the latter 53 feet.

Lord Stanhope took the Bronze Medal with a large exhibit which reflected credit on those who collected it.

Miss Talbot's exhibit was small but interesting. Mention must also be made of Mr. C. Coltman Rogers' wonderful collection of dried foliage, the value of which was enhanced by the addition of representations of flowers, fruit, etc., hand-painted in each case.

The Marquis of Bute's collection included some fine photographs and an interesting comparison between the growth of Japanese and European larch. Two trees planted in 1902, the Japanese then being 14 inches and the European 30 inches, were shown, the comparison as usual being in favour of the Japanese.

Lord Cawdor also sent a small but carefully-selected general exhibit.

With regard to the boards, those sent by Lord Carnarvon were as usual of good quality—clean grown and free from knots—and some nice spruce was sent by Dame E. F. Smyth, but, as previously stated, the hard wood classes were most disappointing. In Class V no second prize was awarded, and in Class VI no first, the exhibits not being sufficiently good.

There was a small entry for Class VII (field gate), in which Lord Cawdor took the first and Miss Talbot the second prize.

In Class VIII (the non-competitive class) the exhibit of the National Fruit and Cider Institute well repaid careful inspection

on the part of those interested, a large amount of scientific information and practical illustration being brought together in a very small space. The value of this exhibit was, moreover, as usual considerably increased by the frequent presence of Mr. Barker or Mr. Ettle, who were always ready to explain procedure and discuss methods.

Lord Plymouth sent some interesting photographs and specimens of seedling trees of various species, and also boards of several different kinds of timber.

The Royal Botanic Gardens, Kew, sent, under the charge of Mr. Dallimore, a well set-up and valuable exhibit in which each specimen had a descriptive ticket attached, thus increasing the educational value considerably.

There was only one entry in Class IX, and that came from Miss Talbot's estate, and comprised a drawing and specification of the heating method of creosoting timber, specimens of creosoted timber (showing the degree of penetration according to the period of immersion) with a report, and various creosoted posts (beech, birch and poplar), which, after being in the ground for many years, were absolutely sound.

The Society was again much indebted to Mr. George Marshall for his services as Judge of this Section.

XIV.—REPORT UPON TREE-PRUNING AND GRAFTING.

By John Ettle, F.R.H.S., Horticultural Instructor to the Somerset County Council: and Superintendent of the Fruit Department of the National Fruit and Cider Institute.

A plot of land adjoining the Art-Manufactures Gallery at the Society's Cardiff Exhibition, was railed off and planted with fruit trees of various kinds for the purpose of practical demonstrations. The wall of the shed was utilised for trained trees of peach, plum, apricot and Morello cherries (all fan trained); and apple and pear trees (horizonally trained), also for some cordon apple and pear trees of various ages, thus showing most of the methods of training to walls, while some of the apples and pears were treated as espaliers for the open garden. The grass space was planted with dwarf or pyramid trees of various ages and standard apple and pear trees four years old.

On each day of the Show demonstrations were given, and

the number of visitors who attended and the various questions asked, testified both to the attractiveness as well as to the educational value of the work. Among those present on the first day were the Lord Mayor of Cardiff and many members of the Corporation and the Bishop of Llandaff.

The standard trees were mostly used each day for the pruning, as their height enabled the work to be better seen and understood. The two first principles in pruning—*i.e.* (1) selecting the right bud to prune, viz: the one pointing in the direction that the resulting growth should take; and (2) pruning close to such bud so that the cuts heal over readily—were described. Wrong methods of pruning were also referred to, with a view to their avoidance. Grafting, with what is known as "dummy grafting," was illustrated, and branches of various sizes, cut from the trees, were afterwards handed round for the listeners to take home, if they cared to do so. The various methods shown were whip or tongue for small stocks; saddle, and the Somerset saddle, for stocks up to one inch in diameter; and crown or bark for branches up to four inches thick. After tying in securely all were covered with grafting wax, which the writer prefers to clay as it is cleaner to use, more easily applied, and does not harbour American blight. It was explained that grafting could be learned at almost any time of the year by using "dummies." By so practising the various cuts, which should all be made clean and to fit together neatly, the novice should be capable of successfully grafting growing stocks in due season.

The writer desires to acknowledge the kindness and assistance he received from Mr. Lipscomb, the Steward of the Department, and to thank Messrs Treseder, the Cardiff nurserymen, for the trouble they took, and for the excellent fruit trees they planted and placed at his disposal.

Examples of results of budding and grafting, done from one to five years previously, were provided by the National Fruit and Cider Institute, in order to demonstrate how junctions are formed between grafts and stocks and buds and stocks.

Most of the exhibitors of spraying machines made use of the trees in the enclosure at various times to show the improvments which have been made in late years with hand-sprayers, knapsacks, &c.

There is every reason to believe that such practical demonstrations as those given at Cardiff are extremely useful; as more can be learnt in this way in an hour than from many hours of book study.

XV.—NOTE ON THE RESIDUARY EFFECTS OF THE MANURES EMPLOYED IN THE MUTTON AND MANURE EXPERIMENTS CARRIED ON AT SEVINGTON, 1900–1909.

By W. Ashcroft. Steward.

In the concluding report on these experiments in Vol. IV. (1909–10) the second deduction drawn from the results was that, "The manures were by no means exhausted." and it was further stated in a note to that deduction, "though the experiment has now been brought to a conclusion it has been arranged with Mr. Stratton that the fencing of the plots should stand for another two years, that next year they should be cut for hay and not grazed, and that in the following year, 1911, they should again be tested by grazing; this, it is to be hoped, if the seasons are favourable, will throw further light on the residuary effect of the manures."

Dr. Somerville, in his notes on these experiments in last year's *Journal*, Vol. V. (1910–11), gave a table showing the approximate yield per acre of hay from the plots in 1910, which was obtained by keeping a careful note of the cartloads that came off each plot; these weights quite confirmed the estimate that was formed by Dr. Somerville and other visitors when they inspected the plots in June, previous to the grass being cut.

As regards the grazing results in 1911, the drought that set in early in the summer necessitated the sheep being taken off the plots at the end of two months; not that there was not sufficient grass to have carried them for some time longer, but the sheep purchased by Mr. Stratton being Downs in good condition and considerably heavier than sheep employed in previous years, he was anxious to lose no time in finishing them for the butcher. Had they been the size and type of sheep (cross-bred Southdown and Kent), employed for the experiment in 1908 and 1909, the grazing could easily have been extended without prejudice to three if not four months.

Ten sheep were put on all the manured plots and seven on the untreated one, No. 6; the latter being quite as many as that plot could carry.

The following tables give the previous manurial treatment of the plots, the weight of hay per acre from each plot in 1910, and the percentage increase over the untreated plot; the total increase in the weight of sheep on each plot for 1911; the increase per acre, and the percentage increase over the untreated plot.

PLOT.		TREATMENT PER ACRE DURING THE NINE YEARS 1901–09.
1	..	$2\frac{2}{3}$ cwt. per acre Cotton Cake, fed in 1901 and 1902; $4\frac{2}{3}$ cwt. in 1907 and 5 cwt. in 1908.
2	..	4 tons Lime in 1901; 5 cwt. Basic Slag in June, 1907.
3	..	10 cwt. Basic Slag for 1901.
4	.	5 cwt. Basic Slag for 1901, and again for 1904.
5	.	7 cwt. Superphosphate for 1901 and again for 1904.
6	..	Untreated throughout.
7	.	Superphosphate as on Plot 5, with $1\frac{1}{2}$ cwt. Sulphate of Potash for 1901, 1903, 1907.
8	..	Superphosphate as on Plot 5, with $\frac{1}{2}$ ton Ground Lime for 1901, 1903, and 1907.
9	..	Superphosphate as on Plot 5, with 97 lbs. Sulphate of Ammonia for 1901, 1903, 1904 and 1907.
10	..	6 cwt. Dissolved Bones for 1901, and 1904.
11	..	Untreated in 1900, 1901 and 1902; 5 cwt. Basic Slag for 1903, and $1\frac{1}{2}$ cwt. Cotton Cake per acre fed each year subsequently.

Plot	Weight of hay per acre in 1910	Percentage increase over untreated plot No. 6.	Total increase of sheep, 1911, in two months on each plot.	Increase per acre (each plot being 3 acres).	Approximate percentage increase in weight of mutton produced over untreated plot No. 6
	cwts.		lbs.	lbs.	
1	16	14%	180	60	7%
2	23	64%	242	80·6	44%
3	30	114%	242	80·6	44%
4	26	85%	261	87	55%
5	21	50%	228	76	36%
6	14		168	56	
7	21	50%	273	91	62%
8	26	85%	231	77	37%
9	26	85%	247	82·3	47%
10	26	85%	234	78	39%
11	26	85%	238	79·3	41%

It was not intended to draw comparisons between the various manurings in this note; such have been sufficiently done in the years during which the experiment was in progress, nor would it be satisfactory, considering how short a time the plots were grazed during 1911, but simply to show that the effects of the manures applied to the plots were by no means exhausted when the experiment closed.

The above figures conclusively prove the same, and also that the financial results of the experiment would have been enhanced had it been carried still further.

XVI.—INVESTIGATIONS AT THE NATIONAL FRUIT AND CIDER INSTITUTE.

By B. T. P. Barker, M.A., Director, and
John Ettle, F.R.H.S., Superintendent of the Fruit Department.

In the following report of the work of the Institute there has been no attempt to provide a record of all work carried on there during the past twelve months. For the most part the problems now under investigation are not of a character to yield immediate results, and a *résumé* of the details of work actually performed in connection with each subject is not likely to be of much general interest or profit. Therefore reference will be made only to a few subjects which have furnished more or less definite results.

Some extension of the work has been possible during the past year owing to the annual grant received from the Board of Agriculture having been increased from £300 to £450. In addition the Board made a special grant of £100 towards the cost of a greenhouse which it was necessary to erect for the purpose of certain investigations on plant diseases and their treatment. It is probable that in the near future considerable further extension will occur, since the Board of Agriculture has intimated that it is prepared, under certain conditions and in the event of the association of the Institute with Bristol University, to make a substantial grant from the sum of money placed at its disposal by the Development Commissioners for the purposes of agricultural research. Negotiations with the University have been for some time in progress, and the proposed scheme of association has been provisionally approved. It is anticipated that it will come into working order during the ensuing year.

The character of the work recently undertaken has been largely determined by the prospect of future developments; and much which has been done within the past season or two is preparatory only to extensions on a more ambitious scale than has been previously possible with the limited resources of the Institute hitherto available.

Investigations on Cider-Making.

SINGLE VARIETY TRIALS.

The practice adopted in previous seasons of restricting the work on a practical scale in the cider-house very largely to a series of variety trials has again been followed. Although the character

of the results to be obtained from work of this description is necessarily limited, and although probably such information of general application as can be furnished by experiments of this nature has already, for the most part, been provided by the work of the past seven years, there still remains an almost inexhaustible field for investigation among the countless varieties which are to be found in the older cider orchards. That there are still many apples of high vintage merit existing unnoticed is certain. This study is also necessary for the improvement of our vintage orchards in order to demonstrate which varieties are worthless or inferior and ought to be allowed to drop out of cultivation.

This work has, however, been continued for an additional reason. It is not necessary to be constantly testing hitherto untried varieties in order to obtain results of value. Some of the most useful and helpful information obtained from this line of work has been gathered from trials of well-known varieties which had already been frequently examined. Repeated trial, under different conditions, of a fair number of varieties is essential in order that the extent of the variation of the results for an individual variety may be disclosed. Its importance from one point of view alone will be indicated in the following section.

The varieties mentioned in the following list were those tested on a practical scale during the season 1910–11. Details of individual ciders and perries will be furnished upon application, and will in due course be published in the Annual Report of the Institute.

APPLES. *Sharp Varieties:* Ashton Long Stem, Dymock Red, Forest Styre, Gatcombe, Greasy Pippin, Kingston Black, Lady's Finger, Lambrook Pippin, Page's Yellow, Prince of Wales Crab, and Yellow Styre.

Sweet Varieties: Ashton Brown Jersey, Morgan Sweet, and Taylor's Bitter.

Bittersweet Varieties: Ashton White, Brown Snout, Chisel Jersey, Cummy Norman, Early Red Jersey, Horner, Improved Broadleaf, Newton Red Jersey, Norton Bitter, Red Jersey, Royal Jersey, Strawberry Norman, and Upright French.

PEARS. Coppy, New Meadow, Paxford, Red Horse, Rock, and Yellow Huffcap.

As was anticipated, the effect of the character of the weather during the summer and autumn of 1910 on the nature of the cider and perry was very marked. For the most part the juices were

below the average in respect of sugar, although this feature was not so marked as might have been expected. The rate of fermentation, although, perhaps, rather higher than usual, was not unduly rapid, especially if the lack of sunshine during the summer of that year is taken into consideration. The figures for tannin were rather variable, but not, as a rule, very different from the average. The effect of this substance on the flavour of the cider was, however, much more pronounced than usual, the deficiencies of the ciders in other respects allowing the astringency of the tannin to stand out prominently. This feature and an acidity higher than the normal, as well as a general thinness and lack of body, constitute the principal characteristics of the 1910 vintage.

THE EXPERIMENTAL ERROR IN CIDER-MAKING INVESTIGATIONS.

It is generally recognised that experiments of an agricultural character cannot as a rule furnish results of that close degree of accuracy which can be attained from experiments dealing with any of the more exact sciences. This is due primarily to the fact that the agricultural investigator is not able to exercise the same degree of control over the conditions of his experiments as, for example, the chemist or the physicist. Factors, such for example as the soil and the weather, are so variable and at the same time exert so much influence upon the results of the experiments that, although two identical series of experiments might be carried out under apparently exactly similar conditions, it is inevitable that the results will vary somewhat, and that they will not, as a rule, do more than approximately correspond.

In carrying on agricultural research it is, therefore, obviously necessary, firstly, that the limits of variation in the results of the same experiments carried out repeatedly under conditions as much alike as is practicable should be ascertained as nearly as possible in order that a distinction may be drawn between such unavoidable differences and those which may be due to differences in treatment as a part of the experiment; and, secondly, that in any set of experiments precautions should be taken and methods arranged to reduce the unavoidable differences to a minimum, so that results due to the form of treatment in the experiments themselves may have every chance to be distinguished from those due to the former cause, or experimental error, as it is termed. It is evident that if in any set of experiments the results under one form of treatment do not differ from those under another form by more than the margin of experimental error, it is impossible to decide whether the

difference observed is due to the form of treatment or merely to the unavoidable irregularities which may occur when the form of treatment is the same. Some idea of the probable extent of the experimental error is requisite, therefore, before the results can be estimated at their true value. The extent of the error is naturally much greater in some kinds of experiments than in others, and is dependent very largely upon the nature of the experiment.

Experiments in connection with cider-making lend themselves in a very marked degree to such errors; and for a time it was difficult to know what degree of importance to attach to the results. The work carried on in the cider house at the Institute for the past seven years has proved to be especially useful in illustrating the possible effect of many of the most important sources of error and in indicating the means of reducing the error.

It is not intended here to enter into a detailed discussion of all the likely sources of error connected with experiments in cider-making and their magnitude; but since every maker who is anxious to improve the quality of his cider must experiment, even if only to a very limited degree, it may prove of service and assist him to a true interpretation of his results if a summary of some of the results at the Institute is given as an illustration of the unreliability of individual trials.

The first subject which may be referred to is that of cider fruit. One of the main objects of experiment in connection with it is to find its vintage value with a view of distinguishing the superior varieties from those of inferior quality. The pitfalls are numerous and may lead to serious error. It is, of course, essential that each variety should be treated separately, any mixture with other kinds rendering the results of no value. Experiments at the Institute have proved that any one of the following factors—the nature of the soil upon which the fruit was grown, the character of the season, the state of ripeness of the fruit at the time of milling, the condition of the fruit as regards cleanliness and freedom from decay and rot,—is capable of causing a result which is entirely misleading as a record of the normal quality of the variety under trial. As an example the results of the past seven years' trials of the Kingston Black variety may be quoted. During that period more than thirty samples of that apple have been made into cider in bulk in the cider house, and 100 additional samples have been dealt with on a small scale in the laboratory. The variation in the quality and character of the ciders produced has been remarkable. The normal type of cider produced by Kingston Black is, as is well known, a medium

brisk cider of good body with characteristic flavour and aroma, the juice fermenting slowly and the fermentation being capable of regulation so as to give almost any degree of sweetness desired. In the results referred to, the cider has occasionally been so lacking in briskness that it might almost have been judged to have been produced from an apple of the sweet class,—in one or two instances the bitterness has been so marked as to suggest that the variety belonged to the bitter-sweet type,—at other times the acidity has been so pronounced that the result was comparable to that from a very sharp apple, such as Cap of Liberty. Instead of the cider being invariably full-bodied, in one or two cases it was almost as thin as that of a Morgan Sweet cider. While, generally, it possessed the typical Kingston Black aroma and flavour, in some instances these were altogether lacking, and an expert would have found it impossible to recognise it as Kingston Black. Typical Kingston Black juices ferment so slowly and regularly that there is generally no difficulty in arresting fermentation at any desired point, and in thus retaining any required degree of natural sweetness. A few of the juices dealt with, however, fermented excessively rapidly, and it was difficult, even by repeated filtration, to restrain fermentation enough to retain much natural sweetness.

While it is only fair to state that these results represent extreme cases, and that they were obtained, not from fruit from the same orchard year after year, nor from samples from different districts in the same season, but from separate orchards on distinct types of soil and in different seasons which varied greatly as regards their influence upon the character of the vintage; yet assuming that it had been possible to get samples in sufficient quantity each season from the same trees, there is no doubt that variations of a similar character, though, perhaps, not quite so marked, would have been recorded. To prove this contention, reference may be made to the results of the series of analyses of the Dabinett apples from a number of trees in the Institute orchard. These have been given each year since the trees began to bear in the Annual Reports of the Institute. The trees grow in the same row in the orchard, the soil varies comparatively little, and the conditions are apparently practically the same throughout. Nevertheless in any one season—to say nothing of the comparative results for different seasons—marked differences in the quality of individual juices occur, which in some years are sufficiently wide to be comparable with those just referred to in the case of the Kingston Black ciders.

In the face of this diversity it is obvious that it is not a simple

matter to decide what is the vintage character and value of any variety. Clearly the result of a single trial may be absolutely misleading. The most reliable way to arrive at a satisfactory decision is to obtain a sufficiently large number of results of individual trials made under a variety of conditions, so that it can be conclusively seen what type of result may be considered representative of the variety. Referring back to the Kingston Black example, the typical character of the cider made from this variety is now so well known that there is no difficulty in deciding whether any individual sample of Kingston Black cider is representative of the vintage qualities of that variety, or whether it is misleading. This is owing to the fact that the trials of this variety have been sufficiently numerous to make it perfectly clear what a Kingston Black cider under fair conditions should be.

However, it is manifestly impossible for even a small proportion of the existing cider varieties to be thoroughly tested in that fashion. The amount of time and labour required would prohibit it. Either one would have to be content with the results of a limited number of trials,—taking the chances of the results being somewhere near the truth and corresponding reasonably closely with one another,—or a few sorts only could be tested. It is here that the work with the Kingston Black ciders is of assistance. It shows clearly under what conditions the results approach the typical, and in what circumstances anomalous results may be expected, thereby furnishing a guide for work with other varieties. Using the results of that work as a basis for a standard method of testing, the following outline may be taken as the minimum from which definite reliable conclusions could be drawn.

For any variety not less than three trials should be made, and these must be made in at least three separate seasons. The seasons selected for the purpose should be fairly normal in character. It would be useless to expect reliable results from trials with fruit pressed, for example, in the autumns of 1910 or 1911, owing in the former case to the cold, wet, sunless summer, and in the latter to the heat and long-continued drought. The soil on which the fruit is grown should be of a type known to be capable of producing good cider from standard varieties. A test with fruit grown on a light sandy soil, known to be incapable of producing anything but a thin hard cider, would obviously possess no value as a trial of the merits of the variety. The fruit should be taken from healthy trees in their prime, since the results with fruit from young or very old trees are frequently far from typical. The sample of fruit must be a fair one, free from excessively bruised or decaying apples. It

should not be gathered until perfectly fit to come from the trees, and it should then be stored, preferably with protection against the weather, until it reaches the right stage of ripeness for milling. Unreliable results will be obtained if the apples are milled in an unripe or over-ripe condition. The methods of cider-making followed must be the same on each occasion, and approximately the same bulk of juice should be used for each trial. Finally, if any accidental taint of flavour should be acquired, or any circumstance arise which indicates that influences likely to affect the result have been at work, the trial should be rejected absolutely, or its results accepted only with reserve corresponding to the degree of seriousness of the disturbing factor. If, after these precautions have been taken, the results for the respective trials correspond fairly well, they may be accepted with confidence as reasonably accurate. If, on the other hand, the results are seriously discordant, no final decision is justified until after further trial.

If, instead of testing the quality of the fruit, it is desired to compare the effect of certain variations in the method of making, corresponding precautions to ensure the reliability of the results are necessary. These differ according to the nature of the matter under investigation. There is also introduced the element of comparison. To take a concrete example, the question of the relative merits of immediate pressing of the pomace and maceration for some hours before pressing may be considered. In this case the kind of fruit used in the experiments is not of primary importance; but it is necessary that for each test either the same kind of fruit should be used, or, if more than one variety is utilised, the proportionate weights of each kind in the mixture should be the same. The fruit in each instance should be taken from the same source. The milling of the fruit should be done on the same day, in the same manner, and under the same conditions. The pressing of the pomace should be regulated so as to be as nearly as possible uniform for both lots of pomace. The quantity of juice eventually utilised should be the same in both cases, and the fermentation should be carried out in casks of equal size and of the same type. The after-treatment of the juice must be identical in each case, and if racking and filtration are resorted to, those operations must be performed for both lots of cider on the same day. It is highly desirable that immediately after filtration samples of each should be bottled off, since the cider in bottle is more likely to afford a reliable basis of comparison than that in cask on account of the risk of deterioration from outside influences in the latter case. In deciding the relative merits of the two systems a number of individual points of com-

parison must be taken into account, such, for example, as the yield of juice, its rate of fermentation, the ease of filtration, the degree of natural clearing, the aroma, flavour, and body of the mature cider, and its keeping qualities.

Unfortunately in working on a practical scale each of those points is liable to be affected by external agencies to so serious an extent that the effects caused in this way may be at least as great as any produced by the difference in treatment in the two cases. It has not, for example, been possible hitherto to regulate the pressure during the expression of the juice so that the two cheeses may be subjected to exactly the same power for the same space of time. Consequently, unless the general tendency as regards yield of juice in a long series of results is in the same direction, no reliable conclusion on that point can be arrived at. Again, as regards rate of fermentation, this depends not only upon the kinds of yeasts present in the two cases and their relative proportion—a matter which it is very difficult, if not impossible, to control satisfactorily—but also upon the cask in which the juice is fermented. Casks of apparently the same type in every respect frequently differ widely in their influence upon the rate of fermentation of the contained juices. Possibly to some extent the difficulties as regards rate of fermentation may be eventually overcome at the Institute by the use of equal amounts of a selected yeast added in quantities sufficient to dominate fermentation, and by the substitution of glazed vessels for casks. The latter cannot be thoroughly sterilised with certainty, and the aeration of the juice also varies. Those drawbacks would be obviated by the use of glazed vessels. With regard to the other points mentioned there are also difficulties of corresponding importance which need not be enumerated here. It has been shown sufficiently that in any single experiment the chances of obtaining a reliable result, even with the most careful work, are seriously affected by the numerous factors which can interfere.

In order, therefore, for any conclusions to be satisfactory they must be based upon the results of a comparatively large number of individual experiments. It is unlikely that the results will in all cases be strictly uniform. They have proved in many instances to be very discordant. The most careful discretion is thus necessary in drawing conclusions, and real progress can only be obtained after careful and long-continued investigation.

CIDER SICKNESS.

From time to time reference has been made in these Reports to "cider sickness." The subject is one which has occupied attention

at the Institute since the investigations on cider-making were started there in 1904. The results of the observations made during that period have been of considerable service in extending our knowledge of the disorder and in suggesting methods of management of cider so that its liability to attack may be lessened. Until recently, however, it had not been possible to devote the amount of time to its study in the laboratory necessary to investigate it thoroughly. With the assistance of Mr. V. F. Hillier, of Bristol University, an attempt to gain a more satisfactory knowledge of it has lately been made. The work is not yet finished, but sufficient information has been obtained to make it worth while to publish a preliminary account of the investigation. This was given in some detail in a paper read before the British Association at the Portsmouth meeting last September, of which the following is an abstract with the addition of further results which have been since gained.

Since the general features of the disorder have been described in these pages on previous occasions, it is unnecessary to recapitulate them at greater length than to state that " sickness " is the disorder of cider, very commonly spoken of by some makers as " second fermentation," which causes in hot weather a violent fermentation of many sweet ciders. accompanied by the development of an unpleasant aroma and flavour and generally also of a dense turbidity of the liquor. It is prevalent in all the important cider-making areas in this country, although certain districts suffer more severely than others. In view of what is now known about the subject, it is evident that the fact that some localities are more prone to it than others is not due to a single cause but to a combination of factors. Sickness is a bacterial disorder, and it might therefore be supposed that the reason why certain districts invariably suffer from sickness and others generally escape is the presence or absence of the " sickness " bacteria. This is not so, however. While it is possible, and perhaps probable, that the organisms may be more abundant in some localities, there is considerable evidence to show that their distribution is very wide and that the explanation of the liability of a cider to the disorder must be sought in other directions as well. It has been found that the degree of acidity of the cider is largely responsible for its power of immunity, ciders with high acidities being less susceptible than those with low acidities. Consequently ciders made from mixtures of apples in which sweet and bitter-sweet varieties predominate are far more liable to the disorder than those made from blends containing a preponderance of sharp varieties. Hence in counties like Gloucester, Hereford, Monmouth,

and Worcester, in which sharp apples are plentiful, sickness is generally relatively less frequent than in Somerset and Devon, where bitter-sweet and sweet varieties are more abundant. Since also, as has been shown in an earlier Report, the rate of fermentation of the juice is important in respect of the degree of resistance to sickness, slow-fermenting juices being far more liable to it than quick-fermenting ones, the varieties of apples grown in the district have a great bearing upon the frequency of sickness in that district, seeing that some kinds normally yield slow-fermenting juices, while others give juices which ferment rapidly. The nature of the soil upon which the fruit is grown also becomes of importance in connection with sickness, since the rate of fermentation is involved, it being well known that a given variety on one kind of soil may yield a slow-fermenting juice and on another kind a rapid-fermenting one.

It is evident, therefore, that the question as to the frequency of occurrence of sickness in different localities is complicated by the influence of several distinct factors.

Although sickness crops up every year, it is far commoner in some seasons than in others. This is not difficult to understand in view of what has just been stated in connection with the distribution of the disorder. Anything affecting either the degree of acidity of the cider or the rate of fermentation of the juice must also influence its susceptibility to sickness. The nature of the season can affect the prevalence of sickness in at least four different ways. Firstly, the relative sizes of the crops of sharp, sweet, and bitter-sweet apples vary greatly in different years, the sharp varieties being generally most susceptible to unfavourable weather conditions. In this manner the degree of acidity of the cider is influenced. (It is worthy of remark in this connection that the same result is sometimes produced artificially by the demand for sharp apples in some seasons for jam-making and other market purposes. Cider-makers and growers would be well advised therefore to take precautions to prevent any serious shortage of sharp fruit.) The rate of fermentation is also affected in a similar way. Secondly, the nature of the season is directly responsible for the quality of the fruit and its juice, the acidity after cold, sunless summers being generally considerably higher than after warm, sunny ones. Thirdly, the rate of fermentation of the juice is directly affected for the same reason. Fourthly, the temperature to which the cider is exposed after its primary fermentation has ceased is of influence. High temperatures favour sickness. Consequently it appears as a rule more frequently in hot than in cool summers.

The malady is not confined to this country. The accounts of apparently similar disorders which have been recorded in other cider-producing countries are for the most part not sufficiently detailed to allow with certainty their identification with that now under consideration; but there seems to be no doubt from the descriptions given that the disorder termed "maladie de la pousse" or "maladie de la tourne," which affects French cider is the same as "sickness." It does not, however, appear to have been closely investigated, and has been regarded as analogous to the disorder of the same name which affects light wines. There are many points of resemblance between the latter and cider sickness, but the characters of the organisms causing the two disorders and the chemistry of the changes produced by their action differ in several important respects.

The changes in cider caused by sickness can be classed under three heads:—

(*a*) The development of a peculiar and characteristic aroma and flavour.

(*b*) The production of a more or less copious turbidity or deposit.

(*c*) The destruction of sugar, accompanied by an evolution of gas.

While all occur in a typical case of sickness, it frequently happens that the character of the disorder as manifested varies considerably. These variations have been described in the Report previously referred to, and are due to the absence or modification of the two latter series of changes. Occasionally instances of violent "second fermentation" or of marked turbidity unaccompanied by the characteristic "sickness" flavour and aroma occur, but no proof has yet been forthcoming to indicate that they are caused by "sickness" bacteria; and the balance of evidence is clearly in favour of the view that sickness in cider is always accompanied by the production of the characteristic flavour and aroma. Assuming that to be correct, the latter are the only features to be relied on as constant in an attack of sickness.

The chemistry of these changes is still under investigation; but some of the principal features have been examined.

The aroma and flavour are mainly, if not entirely, due to the formation of certain volatile organic compounds. While it is possible that one particular substance may be the primary cause of the flavour and aroma, it is certain that those features are complex in character, and the result of the presence of several distinct compounds. Their identification is a difficult matter, since they are probably not present in quantities larger than mere traces, and

consequently cannot be isolated and analysed. The presence of acetaldehyde has been proved, and other aldehydes possibly also occur. Certain volatile organic acids, among which acetic acid and butyric acid are prominent, have also been noted. The decomposition of the sugar by the bacteria is accompanied by the formation of a characteristic odour, somewhat similar to that of decaying lemons, and due probably to one or more volatile organic acids not yet recognised. The aroma of a pure sugar solution fermented by the "sickness" bacterium is quite distinct from that of sick cider. It is highly probable that there is some constituent peculiar to apple and pear juice—the characters of cider and perry sickness correspond in all essential particulars—which is decomposed by the bacteria and yields the compound or compounds which give to the aroma and flavour of sick cider the characteristic feature which distinguishes it from those of all other fermentable liquids thus far tested with the bacteria. Under some conditions an appreciable odour of sulphuretted hydrogen has also been detected.

The turbidity and deposit are due mainly to the deposition of an insoluble substance in the cider. Experiments point to the probability that this is a product of the decomposition of part of the tannins and related bodies in the cider, since a similar product has been obtained in sugar solutions containing tannic acid fermented with the bacterium, while sugar solutions without tannin treated similarly give no deposit or turbidity of the same character.

The third series of changes occurring during sickness, viz., the violent fermentation and disappearance of the sugar, are characteristic of cider sickness as a bacterial phenomenon in respect of the products of the action, and serve to distinguish the sickness organisms from others previously studied which are able to ferment sugar. The gas given off during fermentation consists almost entirely of carbon dioxide, the remainder, which does not exceed 5 per cent., being principally, if not entirely, hydrogen. In this respect the action closely resembles normal alcoholic fermentation of sugar by yeast. It also resembles the latter in the production of a relatively large quantity of ethyl alcohol, quantitative experiments having shown that the equation for the decomposition of the sugar by the bacterium works out almost identically with that for yeast. Other products of the decomposition of the sugar are acetaldehyde, and acetic, butyric, and oxalic acids. The decomposition of the sugar seems to be, as a rule, more or less incomplete, and there is some evidence to show that part of it is not fermented in the above fashion, but is converted into a substance of entirely different character.

The malic acid naturally present in cider is also attacked by the bacterium. Except, however, in relatively sharp ciders, *i.e.*, those with acidity above ·6 per cent., sickness does not result in any diminution of the total acidity, the loss due to the decomposition of the malic acid being more than compensated for by the formation of small quantities of acetic, butyric, oxalic, and, possibly, other organic acids.

The susceptibility of a cider to sickness depends upon a number of factors to which passing reference has already been made in the earlier part of this article. The most important are the rate of fermentation of the cider, its degree of sweetness, its acidity, and the temperature at which it is stored.

It has been previously shown that juices which ferment rapidly yield ciders which are not nearly so susceptible to sickness as those which ferment slowly. This result appears to be due to two reasons. Firstly, a rapid primary fermentation of the juice indicates that the yeasts are comparatively well nourished and are therefore able to multiply freely and set up a vigorous alcoholic fermentation. Those conditions seem to prevent any considerable development of the sickness bacteria during the period of active primary fermentation, with the result that when the stage of the arrest of this fermentation is reached, the number of the bacteria present in the cider is relatively small, and their vitality very feeble,—possibly none may survive to this stage—and consequently the liability of such a cider to sickness is very small unless infection with active bacteria is allowed to take place later. Secondly, a rapid rate of fermentation generally means that very little sugar remains in the mature cider. The sickness bacteria are, therefore, unable to flourish owing to the lack of suitable carbohydrate food.

Seeing that sugar is required by the bacteria for their active multiplication, it follows that the degree of sweetness of the mature cider is a factor of importance in relation to the question of the liability of that cider to sickness. If the amount of sugar present is small, sickness, if it occurs at all, can only be slight. If the amount exceeds 3 or 4 per cent., the attack of sickness may be severe. Whenever sugar above that amount is present, there must always be risk of sickness. *Per contra,* the absence of sugar means immunity from sickness. These facts should be well considered by those who aim at the production of a sweet cider.

The natural acidity of the cider is of the first importance in connection with susceptibility to sickness. As a general rule, the more malic acid there is present in a cider the less liable it is to sickness. Experiments have shown, however, that unless the amount of malic

acid exceeds ·45 or ·5 per cent., it is insufficient by itself to prevent sickness. Ciders containing larger quantities than those mentioned occasionally turn sick if other conditions are very favourable to sickness, and amounts above 1 per cent. are required if there is to be any degree of certainty as to the ability of the cider to remain immune from sickness.

The temperature at which the cider is stored is of considerable importance. Storage in a warm place greatly favours sickness; but the cooler the temperature the longer and the better able is the cider to resist sickness. The risk of the development of sickness in a cider stored below 50°F. is inconsiderable.

It is interesting to note that, although tannin is popularly supposed to have an important action in cider as a preventive of bacterial disorders, and on that account the use of a large proportion of bitter-sweet apples has been recommended by most authorities, in the case of sickness that substance, in the amounts commonly present in pronounced bitter-sweet varieties, does not seem to offer the slightest check to the growth of the bacteria; and the use of bitter-sweets actually favours the disorder on account of the low acidity of their juice.

Earlier experiments had made it certain that the ultimate cause of cider-sickness was the development of a certain organism or organisms in the liquor. The flora of sick cider was found on examination to be very complex, many types of bacteria and yeasts being present. A large number of different forms were isolated from time to time from sick ciders, but none proved to be capable of inducing sickness in a sound cider. Last spring, however, by the use of special methods which had been suggested by previous results, a bacterium capable of producing all the symptoms of sickness in a sound sterilised cider was successfully isolated. Its characters and life history have since been fully studied. It is unnecessary to go into details here with regard to its general characters and relationships. Its properties, as far as they are concerned with cider sickness, have already been indicated in the foregoing account of the disorder. Thus the organism ferments grape and fruit sugars, decomposing them in the manner outlined above. It also produces the characteristic flavour and aroma of sickness in sterilised cider infected with a pure culture of the organism, and gradually causes the precipitation of the substance which is responsible for the turbidity of sick cider. Its growth practically ceases at temperatures below 55°F., and is very slow except between 70°F. and 95°F. Growth ceases above 40°F., and the organism is killed on exposure for five minutes to a temperature of 135–140°F. No

spore formation has been observed. It does not flourish in an acid medium, and can only grow with difficulty if the acidity is higher than ·6 per cent. malic acid.

This investigation has proved valuable on account of the suggestions which it offers for the prevention of cider sickness in practical cider-making. It is evident that the sickness bacteria are very widely spread, and that they are to be found in many, if not all, freshly pressed juices. Consequently the surest means of warding off the disorder is to produce a type of cider more or less immune to their attacks. This can to a large extent be accomplished by blending, as pointed out in an earlier Report, the aim being to produce a cider capable of a vigorous and fairly rapid rate of fermentation and possessing an acidity as high as considerations of palatability will allow. After fermentation, it should be stored at as low a temperature as possible. Experiments with bottled ciders show conclusively that early bottling greatly reduces the risk of sickness.

Since the disorder is caused by bacteria, it is important that strict attention should be paid to cleanliness; and it is desirable that all vessels and appliances with which the juice or cider comes in contact should be sterilised as efficiently as possible by steam or by washing with a suitable antiseptic, so that risk of infection may be reduced. It is possible also that a satisfactory method of sterilising the fruit, and of thus preventing any entry of the bacteria into the juice from that source, may be devised, either by washing in water containing an antiseptic or in hot water. Experiments in this direction are now in progress.

Investigations on Spray Fluids.

THE FUNGICIDAL ACTION OF BORDEAUX MIXTURE.

The past decade has witnessed the introduction of spraying for the protection of certain cultivated crops against the ravages of insect and fungoid pests as a regular part of the routine of the agriculturalist and horticulturist. Our knowledge of spray fluids and their action is still in its infancy; and there is no doubt that every year large sums of money are absolutely wasted on worthless spraying solely because of ignorance of the action of the various washes applied and the conditions requisite for their successful use. There is at the present time great need for a systematic study of the mode of action of the most commonly used washes. This

aspect of the subject has been given attention at the Institute for some time past, and during the last two years the fungicidal action of Bordeaux mixture has been closely studied. The work has been carried out in collaboration with Mr. C. T. Gimingham, F.I.C., Lecturer in Agricultural Chemistry at Bristol University, and the earlier results were published last May in the *Journal of Agricultural Science.* The following summary of the work deals mainly with those points which are of more or less direct practical bearing.

The chemistry of Bordeaux mixture is complicated, and was little understood until Pickering published the results of his work in the Reports of the Woburn Experimental Fruit Farm and elsewhere. He showed that the addition of lime, in gradually increasing amounts, to solutions of copper sulphate, resulted in the formation of a series of basic sulphates of copper. The compound finally present in ordinary Bordeaux mixture, made from equal weights of lime and copper sulphate, is a substance consisting of one of those basic sulphates in combination with lime. When the Bordeaux mixture is made from lime-water instead of the usual milk of lime, the compound formed depends upon the proportion of lime-water used. According to Pickering, when any of these compounds are sprayed on foliage they are gradually decomposed by the carbon dioxide of the air, and copper carbonate together with some copper sulphate is formed. To the latter, which is soluble, he attributes the main fungicidal action of Bordeaux mixture. Since lime is attacked by carbon dioxide more readily than the basic copper sulphate, it follows that in Bordeaux mixtures containing an excess of lime, such for example as the ordinary mixture, there will be little copper sulphate liberated until the lime has been completely carbonated. According to Pickering's view, therefore, it is better to use a form of Bordeaux mixture containing no excess of lime than one with excess of this substance, since it will become actively fungicidal more quickly. Hence he introduced the form of the mixture now known as Woburn Bordeaux paste, which contains no excess of lime and which is claimed to be much more efficient than the ordinary form. It is therefore asserted that it is a much more economical spray to use, since much less copper sulphate than in ordinary Bordeaux mixture is required to produce the same effect. If Pickering's hypothesis is correct, it is evident that the sooner the general use of the ordinary mixture is replaced by that of the Woburn paste the better; but it is desirable that the evidence in its favour should be conclusive, and to that end it is necessary that the manner of the fungicidal action of the various forms of Bordeaux mixture should be thoroughly investigated. Hitherto

attention has been specially given to the purely chemical side of the question; but in the work which has recently been done at the Institute the biological aspect has been specially dealt with.

It has been generally assumed that the root of the matter consists in the determination of the manner in which the insoluble copper compounds of the various types of Bordeaux mixtures are rendered soluble. There appear to be three possible modes :—

(1) Atmospheric agencies, especially the carbon dioxide of the air, may be responsible. This explanation is purely chemical, and is the one favoured by Pickering.

(2) The foliage of the sprayed plants may exercise a solvent action.

(3) The fungus against which the spraying is directed may be itself the cause, owing to the secretion of substances capable of dissolving the insoluble copper deposit.

Mr. Gimingham has examined in some detail the action of carbon dioxide upon the copper compounds present in Bordeaux mixtures, and has come to the conclusion that the results make it impossible to assign their fungicidal action to copper sulphate liberated by atmospheric carbon dioxide. It is, however, possible that rain or dew may exert a slight solvent action apart from any dissolved dioxide they may contain. Some results obtained in the United States by Crandall favour that idea, but the evidence is hardly conclusive and there is some reason to believe that the solution of the copper which he observed may have been accomplished by excretions from injured foliage on the sprayed trees.

With regard to a direct solvent action by the sprayed foliage itself upon the copper deposit, the whole of the evidence obtained points strongly to the conclusion that under ordinary conditions uninjured leaves do not possess at the most more than a very slight solvent power, and that the existence of any at all is very problematical. On the other hand, injured foliage does exert a distinct solvent action, even although the injuries may be almost microscopic. In practice it is doubtful whether there is any considerable number of leaves on fruit trees free from injury of some sort; and therefore the injury factor as a means of rendering some of the copper in the Bordeaux deposit soluble is one which must be reckoned with. The scorching which so commonly occurs after spraying with Bordeaux mixture, is probably due mainly, if not entirely, to the copper rendered soluble by excretions from injured portions of leaves penetrating at the point of injury to the inner delicate tissues

of the leaf and causing damage to them. It is well known, for example, that serious scorching occurs after severe attacks on foliage by insect or fungoid pests, the injuries caused by the parasite being directly responsible for the result.

The possibility of a direct solvent action by the fungus in the Bordeaux deposit has been frequently considered by earlier workers on the subject, and there has been much conflict of opinion over the results. The question could certainly not be considered to have been definitely settled. As the result of a large number of experiments at the Institute there is now strong evidence in favour of the view that many fungi, if not all, can exert a solvent action. The behaviour of a variety of fungus spores in relation to the copper compounds of various Bordeaux mixtures has been examined, and it has been found that, although little or no action is apparent if the spores are not actually in contact with particles of the copper compounds or in very close proximity, direct contact between a spore and a particle of the copper compound may result in the death of the spore. Spores with thick resistant walls are not generally affected; but those with thin walls, or the thin-walled delicate germ tubes of thick walled spores, are almost invariably killed by contact with the insoluble copper compound. This points directly to the power of thin-walled fungus cells to act on the copper and produce a soluble compound which is absorbed by the organism and thus causes its death.

It is true that the basic sulphates of copper are not absolutely insoluble, and that if the dissolved traces were to be removed by fungus spores or otherwise, more would at once pass into solution. It is thus possible to imagine a gradual accumulation of copper in a germinating fungus spore, which might finally become sufficient to cause death. There would be, as it were, a race between the rate of absorption of copper and the rate of growth of the fungus. The possibility of a cumulative action was considered in the paper referred to above, and has recently been favoured by Pickering. The results already mentioned have, however, made such an explanation difficult to accept, since spores were found to germinate and grow in the presence of the basic copper sulphate so long as they were not in actual contact with solid particles of that substance.

On the whole it seems probable that Bordeaux mixtures are effective as fungicides mainly because the fungi themselves, except when in a resting condition, act upon any portions of the insoluble copper compound with which they may come in contact, absorbing a soluble product and thus actually poisoning themselves. Some

soluble copper compounds may also be formed by atmospheric agencies, and by leaf action after injury; but neither of these actions appears to have been conclusively demonstrated to be the cause of the presence of sufficient soluble copper to account for the undoubted fungicidal properties of Bordeaux mixtures.

If these ideas are correct, they have a direct bearing upon the practical side of Bordeaux spraying. It becomes absolutely essential to spray thoroughly, so that the leaf surfaces liable to infection may be covered as completely as possible with the deposit copper of the compound and thus give little opportunity for the development of any fungus spore which may alight upon them. For the same reason it is important to prepare the spray fluid in such a way that the copper precipitate is obtained in as finely a state of division as possible. It is also important to give attention to the adhesive properties of the spray, so that it may remain as a coat on the foliage for as long a period as possible.

In a word, the physical rather than the chemical properties of the precipitate in the spray fluid, are of primary importance; and indeed it appears probable that, were it not for their manifold differences mechanically and physically, all insoluble copper compounds of the type under discussion might be equally efficacious as fungicides for a given weight of copper present.

These ideas explain, also, why Bordeaux mixture is effective as a fungicide from the moment of its application, a view generally held by practical experts. According to Pickering's atmospheric action hypothesis ordinary Bordeaux mixture would not be effective until all the lime had been carbonated by the carbon dioxide of the air.

Their bearing upon the question of the relative efficiencies of the Woburn Bordeaux mixture and the ordinary mixture is considerable. Assuming two leaves to be equally well coated with those sprays, preference would be given to the former, since the film in that case would consist entirely of the copper compound, whereas in the latter the copper particles would be interspersed with unchanged lime and the gaps made by the latter might afford opportunity for attack by the fungus at those points. The relations between the lime and the fungus, however, must be taken into account, and there are also other factors which enter into the question and complicate it. However, it certainly seems that a coating of the Woburn mixture as complete in respect of copper as that of the ordinary mixture may be necessary, and consequently it does not appear likely that the total quantity of copper used for the former can be reduced much below the amount required by the latter. It is

possible, moreover, that the presence of excess of lime in the ordinary mixture may act detrimentally on the fungicidal value of the copper, in which case the Woburn mixture with no excess of lime will hold a distinct advantage.

Such points require further investigation, and work in the laboratory must be supplemented by thorough tests in the field before a final decision as to the best form of Bordeaux mixture can be attained.

XVII.—REPORT OF THE SOCIETY'S CONSULTING CHEMIST.

(*Dr. J. A. Voelcker, M.A., F.I.C., etc.*).

During the year 1911 fourteen samples were submitted to me by members of the Society. In addition to these, there was one consultation, while 28 samples of milk were also analysed in connection with the Society's Annual Show at Cardiff.

The samples submitted were as follows :—

Feeding Cakes	2
Fertilisers	2
Lime	3
Soils	2
Waters	5
	14

Feeding Stuffs.

(*a*) *Decorticated Cotton Cake.*

One sample of this was sent me, and was found not to be of high quality. The analysis was as follows :-

Moisture	9·18
Oil	7·67
*Albuminoids	39·50
Carbohydrates, etc.	26·64
Woody Fibre	10·56
†Ash	6·45
	100·00
*Containing Nitrogen	6·32
†Including Sand	·05

The proportion of woody fibre in this cake is distinctly more than a well-decorticated cake should give.

FERTILISERS.

(*a*) *Poultry Manure.*

A sample stated to be "poultry manure and earth" was sent to me, and gave the following results :—

Moisture	25·63
*Organic Matter	10·51
†Phosphoric Acid	·86
Lime	6·58
Magnesia, etc.	9·14
Sand	47·28
	100.00
†Equal to Tribasic Phosphate of Lime ..	1·88
*Containing Nitrogen	·41
Equal to Ammonia	·50

It will be seen that nearly one-half of this was composed of sandy matter, and another one-quarter of water. The quantity of ammonia is distinctly small, and it cannot be said that the manurial value is at all material.

(*b*) *Refuse from Wool Cleaning Machine.*

A sample of this gave the following results :—

Moisture	9·21
*Organic matter	45·13
Oxide of Iron, Alumina, Carbonate of Lime, etc.	15·59
Insoluble siliceous matter..	30·07
	100·00
*Containing Nitrogen	2·23
Equal to Ammonia	2·71

LIME.

Three samples of lime were submitted to me from the same source, the member in question residing in Cornwall. In each case the limes had been sold on an analysis which showed them to contain 94·18 per cent. of lime. The results obtained by me were as follows :—

	No. 1.	No. 2.	No. 3.
Water of Combination, etc.	6·14	11·62	19·19
Oxide of Iron and Alumina	4·09	3·19	2·01
Lime	83·35	76·24	72·81
Magnesia, etc.	·23	·16	1·18
Silica	6·19	8·79	4·81
	100·00	100·00	100·00

Nos. 1 and 2 cost, delivered at the station, 28s. per ton. No. 3 was offered at 25s. per ton delivered.

It will be noticed that in each case the lime fell very considerably below the guarantee, and in each case also the price must be considered decidedly high.

WATERS.

Of the five samples of water submitted, one was fairly good, though it would be improved by filtration. The others are noted below.

(*a*) Water from a well in the Wealden clay of Sussex gave the following results :—

	Grains per Gallon.
Total solid residue	136·36
Oxidisable Organic Matter	·30
Nitric Acid	·77
Chlorine	19·92
Equal to Chloride of Sodium	32·82
Free Ammonia	Trace
Albuminoid Ammonia	·001

The residue was very excessive, and consisted largely of sulphate of lime together with magnesia salts and chlorides. Though it was not in any way a contaminated supply, yet, by reason of its mineral nature and extreme hardness, it must be considered one unsuitable for a domestic supply. Moreover, it is very difficult to deal with waters of this class with the object of softening them, as no ordinary process, such as the use of lime, is effective. Such waters require special treatment in accordance with their particular composition, and unless the supply were one used on a very large scale, the necessary treatment would be too expensive.

(*b*) This water was sent with a view to ascertaining whether it was fit for human beings or cattle to drink. The analytical results were as follows :—

	Grains per Gallon
Total solid residue	203·84
Oxidisable Organic Matter	1·28
Nitric Acid	None
Chlorine	16·12
Equal to Chloride of Sodium	26·55
Free Ammonia	·065
Albuminoid Ammonia	·012

The residue was extremely large and consisted principally of lime salts, sulphate of lime in particular being present in large amount, and the water being extremely hard. The water, further, contained

much dissolved organic matter and ammonia, and was quite unfit for either human beings or cattle to drink.

(*c and d*) These were two waters from the neighbourhood of Exeter. They were complained of because in the hot-water pipes and boiler a red deposit was formed, which however was not noticeable in the cold-water pipes. The analyses were as follows:—

	Hot Water Tap.	Cold Water Tap.
	Grains per Gallon.	
Total solid residue	12·32	12·04
Lime	2·24	2·24
Magnesia	1·01	1·01
Chlorine	1·32	1·32
Equal to Chloride of Sodium	2·17	2·17
Nitric Acid as Nitrates ..		1·86

The waters were by no means hard, and examination of the pipes referred to showed that the deposit in them was not due to lime or magnesia salts, but consisted of iron compounds, the result of the action of the water upon the metal. A certain amount of zinc was also found dissolved in the water, galvanized iron pipes having been used. The action of the water on the pipes was, no doubt, increased by the heating, for, as stated, in the cold-water pipes there was practically no deposit found.

Experiments with the waters were made as regards their action on copper, and there was an entire absence of any action on this metal, so that the replacement of the galvanized iron pipes by copper ones in the case of the hot-water supply would obviate the difficulties met with.

Soils.

Two samples of soil were sent for analysis. One of these calls for no comment, but in the other case, the soil—which came from the neighbourhood of Bristol—gave the following results:—

	Soils dried at 212°F.
Organic matter and loss on heating.. ..	4·86
Oxide of Iron	3·74
Alumina	4·21
Lime	1·16
Magnesia	1·30
Potash	·42
Soda	·31
Phosphoric Acid	·17
Sulphuric Acid	·19
Insoluble silicates and sand	83·64
	100·00
Nitrogen	·267

This soil—from the mountain limestone formation—came from a farm which was stated to have been very badly farmed for a number of years, and which would only grow *twitch.* The analysis showed the soil to be one of distinctly good quality rather than otherwise, and there was no particular deficiency shown in any of its necessary constituents. The only point calling for attention is that while there was a good percentage of lime shown, such as would not ordinarily call for special liming of the land, the amount of magnesia was even more. On this account—as I have had occasion frequently to observe—I consider that it would be desirable to give the land a dressing of lime. Apart from this, however, the bad farming of the land, rather than any deficiency in its constituents, must be held to be responsible for its condition.

XVIII.—REPORT OF THE SOCIETY'S CONSULTING BOTANIST

(*J. H. Priestley, B.Sc., F.L.S.*).

Since my last report eight inquiries have been received from members of the Society, which, as in the previous year, referred chiefly to troublesome weeds amongst crops or grass land, or to diseases of plants under cultivation. Some of these inquiries were of a very interesting nature, and I regret that my removal from the West of England will prevent my following up the problems that have been raised.

The inquiries calling for special reference in the report all refer to diseases of plants.

1.—*Bean Disease.* In a previous year the damage caused by a rust of beans (*Uromyces Fabae*) was referred to, and the suggestion made that early sowing, while not entirely preventing its occurrence, might diminish the damage caused by the disease.

I am happy to hear from the neighbourhood of Exeter, where this disease produced very serious damage in 1910, that earlier sowing has been accompanied by the production of a healthy crop. This is in accordance with the experience of Worcestershire farmers referred to in a previous report.

2.—*A Disease of Hawthorn,* which was doing serious damage to hedges in Wiltshire, was investigated, and I much regret my observations upon it could not be continued. This disease, so far as my experience goes, has not been known previously in such a serious form in this country.

The plants attacked soon lost all their leaves and remained simply as lifeless branches, which were in all cases extremely rotten at the base. Observations pointed to a root attack or base of stem attack, and in the end a number of plants were found bearing outgrowths of a fungus of the *Polyporus* tribe.

Attempts were made to destroy this fungus in the ground, but with doubtful success, and there is little doubt but that when it has once obtained a hold, the best method of treatment would be removal and destruction by fire of all rotting plants, accompanied by the replanting of gaps with fresh plants and in fresh soil.

From the occurrence of this disease, so far as seen, I should not expect that it would make much progress in a hawthorn hedge growing under suitably healthy conditions, but where the hedge has to struggle against unfavourable soil there seems little doubt the disease can do great havoc. If any member would wish to see the nature of the attack, a fine specimen of the fungus growing on a stump is preserved in the Museum of Natural History at Bristol

3.—*Suspicions of Disease in Larch.* When transferring young larch trees, one may often notice the white mycelial fungus growth spreading from the roots, and in some cases this may be a deterrent from planting out the trees for fear of spreading disease in an established plantation. But this appearance is really quite normal to the larch, and is a phenomenon well-known to the botanist, and termed "mycorhiza." These fine white hairs spreading from the roots are fungus growths, but the fungus seems to be there in no hostile spirit, but rather to have attached itself to the roots in a spirit of partnership. They serve as collecting agents for water, etc., from the soil for the larch roots, probably obtaining in return some food from the tissues of the larch.

In addition to these inquiries of general economic interest, a number of smaller questions received attention, relating to diseases of carnations, geraniums, pears, etc., but the technical points involved are hardly worthy of discussion in this report, though doubtless interesting to the direct sufferers from these visitations.

In conclusion I much regret that my removal to the Chair of Botany at the University of Leeds has prevented my paying such personal attention to several of these investigations as I could have wished.

The Note-Book.

Lincoln Red Shorthorns.—The Shorthorn has hitherto been the most popular breed, not only in England, but all over the world, and has been a great source of revenue to its breeders. It has been fully entitled to this high place, for though at one time there seemed a danger of its milk-bearing properties being sacrificed to beef, yet that has now in a large measure been corrected. We now have another breed becoming so popular that it undoubtedly has a great future before it, and will run the Shorthorn very close.

It is not very long since, outside its native home, the Lincoln Red was almost unknown to the ordinary farmer. Now there are none to whom it is unknown, and very few who are not familiar to some extent with its many good qualities. It has been my lot to see thousands of these grand cattle grazing on the rich marshes, or knee deep in straw in the crewyards (as the foldyards are termed) in Lincolnshire. All over the county they are to be found through that flat stretch which runs from the south through Lincoln and the Gainsborough district, right away to the Humber; in the Wolds, from Brocklesby, through Binbrook by Horncastle, down to Boston.

The finest cattle are grown on the rich flat between the chalk hills and the sea, and the very largest cow I ever saw was at North Cockerington, a few miles from Louth. She was in the hands of quite a small farmer, who told me that soon after calving she had several times made 20lbs. of butter in one week. Although rather a son of Anak, I could only comfortably look over her back. No matter what the breed, such cattle can only be grown on rich deep soils. The thing that struck me most the first year I was in Lincolnshire was the size of the stock.

I know not to this day whether it is the land that grows them, or whether it is the deliberate choice of the people, but it is remarkable that their Shire horses are of the very largest, their cattle the largest of all breeds, their sheep only equalled by the Cotswold, their pigs the Large Curly-coated White, so rapidly coming to the front. Nor does it end here, for in geese the Large Toulouse is the popular breed; in ducks they choose the Rouen, largest of all our English breed; and in fowls they keep largely to the Lincolnshire Buff, a very

heavy and feathered-legged descendant of the Cochin. Since I first pointed this out it has been noted by other writers, and now has a place in standard works.

There is a tradition in the county that these red cattle owe their origin to a cross between the Hereford and the Suffolk Red Poll. This seems probable, as the deep colour is the red of the best Herefords and the horn is what we might expect, viz., a little larger than the Shorthorns. Those who have used crosses of Herefords know how persistent the white face is, and how it crops out for many generations. I have seen a cow one-sixteenth Hereford and the rest Shorthorn having as fine a white face as her great-great grandmother. Still there have been red cattle in Lincolnshire for over a hundred years, and there has been sufficient time for the white face to be lost. White markings in the underparts, are not very uncommon even now, and I have seen some on the top, suspiciously suggestive of the familiar Hereford stripe. Not long ago I saw a calf with white markings coming from parents of very long pedigree. Whatever the state of the breed, the Durham Shorthorn has had its part in the improvement of it, and it is a matter of history that some of Charles Collings's bulls went into Lincolnshire at the time of his sale in 1810.

In their early days the Lincoln Reds were large and slow in maturing. Later the size diminished a little, but much more quality was obtained, and next it seemed as if all was to be sacrificed to beef. But of late great efforts have been made to improve the milk production of the breed, with how great success is shown by the Burton herd, which has won such high honours for Mr. Evens.

Next to size I should place uniformity as the leading characteristic of the Lincoln Red. It has been my fortune to inspect many notable herds of Shorthorns, Herefords, Devons, Red Polls, and many others; but never have I seen cattle which showed so little variation as these. It is very rare to see a weak-backed one. It was as hard to find a bad grazier in Lincoln Fair as a good one in a place which shall not be mentioned. At first I particularly noticed the length of the head, but after a time I got used to it. I am always reminded of the Hereford loin and hips when I look at them, and no cattle are so uniformly deep and heavy fleshed in the thighs.

To a new comer they look as much alike as acorns, and I know no prettier sight in the cattle world than a group of their yearlings. The flesh has improved in quality, but is hardly as fine in the grain as the best Shorthorn. Still, it is excellent meat, and when in the county it was always my choice rather than the mutton. In our

Midland markets no cattle are more easy to sell. There is a bloom and a wealth of hair which, combined with a rich colour, make the young stock most attractive. In constitution they resemble the Hereford. They are the hardiest of the hardy, and will live where some cattle would starve. When we get away from the high class herds we find a great many of the Shorthorns very light-fleshed and shelly beasts. For such there is no bull to equal the Lincoln Red. They are getting fairly plentiful in Leicestershire, but then we are not very far from Lincoln. One neighbour of mine breeds them, and has improved the common Shorthorn of the district by saving plenty of bulls, which have a ready sale as yearlings.

Farther west they are less known. Some years ago I gave a young Worcester farmer an introduction to a Lincoln friend, who sent him down a bull. He afterwards wrote to me that he had the best bull in the district, in the estimation of all his neighbours, and had the best lot of calves he had ever seen. Curiously enough, a well-bred bull will usually throw darker red calves from cross-bred cows than from pure Lincolns.

This is the chief use of the Lincoln bull, and there are very few herds of pedigree Shorthorns that would not be improved by such a cross, more especially now that there are fine milking strains to be found amongst them. Too much size is inseparable from coarseness, and when we read of bulls that have attained to 23 cwt. alive, we cannot help thinking that the limit has been reached, if not overstepped.—" G. A. P." in *Mark Lane Express.*

Light Horse Breeding.—The attention of those who have their country's interest at heart has at length been thoroughly aroused to the importance of the horse-breeding industry. It is realised that, as an item of national defence, the horse is of as much importance as other things that are absolutely necessary for the Army. The Board of Agriculture has been empowered to make grants for the purpose of increasing the supply of horses suitable for military work in all its branches. An Advisory Council has been formed, with an executive standing committee, to consider the best methods for carrying this work to a successful issue. County Committees have been formed, to which sums of money are granted for the purchase of brood mares, to be placed out with suitable custodians, and mated with approved sires. The custodians have the produce as their own property, the only restrictions being that the mares should be well taken care of, be only used for such light work as they can be reasonably expected to perform, that 40s. annual insurance money for each mare be paid, and that fourteen days'

notice be given to the County Committee before any of the produce be sold.

If the Committee does not wish to purchase the animal, or is unable to pay the price asked, then the custodian of the mare can sell the young stock, at any age, to the highest bidder. When a colt or filly is four years old the custodian has power to sell it to anyone he likes, without giving notice to the Committee. Further, a limited number of free nominations are allocated to each committee, to be given to selected owners of approved mares in that district wishing to use the King's Premium stallion.

Briefly, the above is the scheme which was drawn up last spring, and has been acted upon more or less throughout the horse-breeding counties of Great Britain. Ireland has her own horse-breeding regulations, and is not touched by the scheme. All this sounds quite easy on paper; but to properly carry out the many intricate details requires a vast amount of hard work. No doubt the present scheme will be further developed as time goes on, for only those who have practically endeavoured to make the breeding of light horses a financial success know how difficult it is to do so. It is quite impossible to lay down any hard-and-fast rule to avoid the great uncertainty of mating animals of different lines of breeding. It is quite impossible for any farmer, in the ordinary way of business, to work out all the ins-and-outs of his mare's ancestry, so that he may have some idea whether she would cross well with the stallion with which he has an opportunity to mate her. It will be at once recognised how great the uncertainty must be in mating these Government mares with the King's Premium and Board Premium stallions allocated to the different districts. One good solid foundation to the scheme is that every mare will have been passed free from hereditary disease, and every stallion will have been registered as being sound in the same way.

The mares will have been purchased by practical men, and be the best that a £50 average can secure. But the uncertainty of their blood " nicking " with the selected stallions must be great. As time goes on, however, much information will be obtained from the county register of each individual mare, which is to be kept. The County Committees having the control of their own districts will be the best judges of the class of stallions most suited to the mares which are to be found there. The reason that so many disappointments occur in hunter breeding is that there is no breed yet established which can be depended upon to breed true to type—as, for instance, in the case of the Shire—for breeders have to rely continually on a mixture of the thoroughbred with mares produced

from various sources of blood. How often a brood mare fails to produce foals which grow into animals equal in substance and character to their dam. The reason undoubtedly is that they revert to an ancester, of inferior merit of which there is no record. Even if the breeding of sire and dam is well known for several generations, and every care is taken to mate those animals which in conformation and character agree, the question of the prepotency of the sire or dam is practically an unsolved mystery. Breeders find that, in practice, it is impossible to know what a sire can get or a dam produce until they have been *given a trial.* The only thing that a breeder can do is to select animals as nearly perfect in conformation and breeding as possible, and then "wait and see."

Hereford cattle are, I suppose, allowed to be one of the oldest original breeds of any live stock in England. They invariably breed true to colour, and when *crossed* with any other breed, either in this country or in other quarters of the globe, they stamp their white faces on the produce. In over thirty years' experience with the breed, and breeding from strains dating back to the early part of the last century, I found that it was quite impossible to know whether a bull (no matter how excellent in character and conformation) would be a prepotent sire—*until you had tried him.* The best-looking bull I ever bred, from the best and oldest strain on the female line I possessed, was an absolute failure as a sire.

Defective conformation, either in the sire or dam, is even more hereditary than some of the defects which are scheduled as hereditary diseases. Long pasterns, weak ankles, twisted forelegs—which mean that from the fetlock to the foot there is untrue conformation—are the most hereditary defects which can be mentioned. In judging horses begin at the feet. If a horse is faulty below his knees it is seldom worth while looking higher up.

The first brood mare I ever owned had this defect. After about three seasons with hounds she broke down, was put to the stud, and was the founder of a family of hunters, but they all had the family failing, more or less developed, in the conformation of the forelegs, which no change of sire seemed able to eradicate. It was the same with another family, the defect in which was upright pasterns, which seemed to be just as hereditary as long pasterns. Sickle, or curly hocks, are most hereditary, and are a worse defect than a curb developed on a hock otherwise properly formed, yet for this the animal is condemned by the rules laid down for the guidance of the veterinary profession. Vicious or nervous temperament is hereditary. One family of hunters always had a one-sided mouth,

which no bitting could overcome, and this was a pronounced hereditary defect for several generations.

The manufacture of the horse for national defence is of such a complicated nature and of such doubtful financial advantage to those who embark on it, that, sooner or later, the Government must realise that the country will look to them to bear the expense, and not expect private owners to produce the animal required at a loss. All the schemes which are now being discussed, and those which are now in full working order, must be doomed to failure unless a market is found for the young stock bred under the superintendence of the Board of Agriculture. If this is not done we shall only be breeding for foreign countries, whose representatives are now our best customers.—JOHN HILL in *Live Stock Journal.*

Calf Rearing.—The problem is how to rear stores through calfhood, for there is little trouble after the first three months. Though the best plan is Nature's plan, it is too expensive. except for rearing special specimens. Nature's plan is to allow the calf to suck sustenance from the teats of its mother. This means the devotion of a whole year's food and contingent costs of the mother cow to the production of one yearling. The milk of a cow can be put to a much better market than this. To make calf-rearing pay for the milk at the rate it brings in the sweet milk trade, butter-making or cheese dairies, several calves must be reared per annum by each cow. There are many ways to this end, and endless variations of practice to suit situations and abundance or scarcity of labour.

The nearest approach to Nature's original device is to put two calves to suck simultaneously from a cow for three, four, or more months, when they may be weaned off and continued in growth by hand-feeding cake, hay, grass, or turnips, while another pair of new-born calves are put on to suck as their predecessors had done. By weaning such calves at three months old, five calves can be reared each year by any good milking cow. The crux of this course lies in the difficulty sometimes experienced in getting the cows to take the second and third batches of calves. No set plan can be detailed to induce every cow to accept stranger calves, but persistence, directed by brains, always will succeed. The future progress of these calves depends greatly on careful attention and good feeding to keep the baby beef on them. They must not be neglected and allowed to shrink backward. The purchase of sufficient calves of a good beef-making class is a great difficulty in some districts, and the death-rate in those brought by train from a distance is very

heavy unless arrangements are made to see that the calves are well fed before dispatch by rail. Bought at a distant auction mart, where they may have experienced cold, ill-treatment, and hunger for hours, and a long journey afterwards, is cause enough for failure of "luck" when they arrive, without the outbreak of the dreaded "white scour" caused by birth and bedding in insanitary surroundings. The navels of new-born calves should always be tied with disinfected cord before dispatch in a sack for transit. This "white scour" is a great curse of calf-rearing, but by attention to modern hygienic surroundings it can be successfully surmounted.

Calves can be successfully reared on various substitutes for milk, but for the first month of their life it is courting disaster to have much substitute of any sort. After the calf is a month old more liberty of ration is permissible, and much cheaper articles can be given safely in place of a portion of the natural milk diet Where plans of substitutes are pursued it is imperative to hand-milk the cow and pail-feed the calves. If plenty of skim milk or separated milk is available, it can be heated to about blood heat and given in increasing quantity in place of sweet whole milk, beginning at least three weeks after birth, and adding about two ounces of cod liver oil to the gallon of milk. At the age of two months the separated milk and cod liver oil can be entirely substituted for the fresh whole milk, which can be devoted to other younger calves. Calves should be fed at least three times a day for the first few weeks, and may get from three pints to two quarts at a time, according to the age and strength of the calf. At a month old a good strong calf should be getting about three quarts at the morning meal and a like quantity at night. As it gets older it should be induced to eat hay and about ½lb of linseed cake per day. There are many cakes specially made for calves which are successfully used, but cotton cake should not, on any account, be given to calves. Much harm has been done to calves by this cake, which is valuable enough for older stock.

Where no skim or separated milk is available for the older calves, a substitute or equivalent is often found in mixtures of oleaginous meals cooked in hot water to a jelly-like state. Manufacturers have devoted much care and study to the invention of suitable substitutes and equivalents, and while none of these is equal to good milk, wonderfully successful results can be obtained if carefully handled. These substitutes are reduced from the jelly stage to a thin gruel with hot water or skim or butter milk, and gradually used to replace the rations of whole milk. The secret of success lies in gradually working in the substitutes in place of the good milk,

and inducing the calves to take up to half a pound per day of the meal dry. As the calf gets older the quantity of meal or linseed cake should be gradually increased till the next summer, when it should be given at the rate of 2lbs. daily. A good calf meal can be made at home by mixing together two parts by weight of finely ground oatmeal, two parts maize meal, and one part pure ground linseed (not cake which has the oil extracted), and practically as good results have been attained with this mixture as with much boomed substitutes and equivalents. A cream substitute should be pure, rich in fat, and readily digestible, and cod liver oil is the nearest approach to what is wanted. But a milk substitute needs a wider basis, and the above mixture of finely ground oatmeal, maize meal, and flax seed is as good as has been got.

The average composition of whole milk and separated milk is shown in the following tables :—

	Percentage Whole Milk.	Composition of Separated Milk.
Water	87.5	90.5
Fat	3.5	.1
Sugar	4.75	5.0
Albuminoids ..	3.5	3.6
Ash	.75	.8
	100.00	100.00

From the above it will readily be seen that separated milk is a valuable diet, and the addition of two ounces of cod liver oil per gallon is a simple method of adding a cheap substitute for the extracted cream. But to concoct a substitute for milk is a much more difficult problem, and digestive troubles are sure to appear unless the closest educated attention is paid to each calf when a substitute or equivalent is used. It is always a point of difficulty to beginners to know what quantity of meal to dissolve in making the gruel. After some experience the individual progress of the calf will show if it requires less or more, and this knowledge can scarcely be taught by the pen. But it may be some guide to repeat :—Whole milk, sweet and warm for the first month of calfhood, from four quarts at birth to six quarts per day at month old, substitutes slowly and gradually taking the place of milk as time passes. Quantity of meal to make into gruel, about one pint or about half a pound by weight, for each calf per day, made finally into six quarts of warm gruel. At first the meal should be gently boiled or steeped in boiling water and left for six or eight hours to jelly, then reduced to thin gruel with warm water.

During the transition period, when milk is in use the quantity of gruel will not, of course, be six quarts. That is the daily allow-

ance of milk, or milk and substitute, or substitute. Even at three months, two gallons per day fed at twice, is ample, and need not be increased.

Increase the dry meal feed at and after three months from half a pound to two pounds when a year old.

Plenty of sunlight and ample ventilation are necessary. Calves can stand much exposure to cold if well fed.—HOWBURN in *Scottish Farmer Album.*

Rations for Farm Horses.—No animals on the farm seem to make such rapid inroads into the hay stacks during the winter as the horses, and it becomes of the greatest possible importance to consider whether a certain amount of economy cannot be attained without any loss of efficiency. There are numerous farms on which from one-third to one half of the food given to the horses is entirely wasted. This wastage is caused not only by carelessness in the methods of feeding, but by the common use of very imperfectly balanced rations.

Farmers are beginning to recognise that it is of the utmost importance to give properly balanced rations to their cattle, particularly to their dairy cows, and the same applies to horses. If 2lbs. of albuminoids and 12lbs. of carbo-hydrates are essential for the economic production of a certain amount of milk, beef, or work, then there is a serious loss of efficiency if we feed only 1½lbs. of albuminoids with 12lbs. of carbo-hydrates, and a considerable loss of food should we give 2lbs. of albuminoids with 15lbs. of carbo-hydrates. It cannot be too carefully remembered that an animal cannot build up its body and perform its functions economically without the proper proportions of the necessary foodstuffs, any more than a builder can build a house to a certain plan without the proper proportions of bricks, mortar and other materials. In a state of nature the horse obtains what he requires from the herbage on which he grazes, and can do this to a very considerable extent on ordinary farm pastures. It is, however, well recognised that certain districts, and even certain fields on a particular farm, are more suitable for horses than others. This is undoubtedly due to the fact that the herbage in those places supplies the animals with the food materials they require in proper quantity and in more correct proportions. It is equally certain that horses kept in a stable and fed with badly proportioned foods are unable either to look well or do their work efficiently.

When the albuminoids are deficient, the animal endeavours to make up the deficiency by consuming much too large a quantity of

hay or straw, with the result that indigestion is a common trouble. With an excess of albuminoids these valuable and expensive parts of the food are not only wasted by being broken down to take the place of carbo-hydrates, but the kidneys are unduly taxed in their effort to get rid of the surplus nitrogen, and urinary troubles are often the result.

In considering the foods most suitable for winter feeding, one or two peculiarities of the horse must be carefully borne in mind. The first is that the horse has an exceedingly small stomach in proportion to his size, and he is, therefore, quite unable to deal with large quantities of bulky fodder such as are consumed by cattle. It has been demonstrated that when a horse is eating an ordinary bait given in the stable, the first part of the meal is passing out of the stomach into the intestines before the last part is eaten. The consequence is that any hard or rough fodder, such, for example, as wheat straw chaff, unless it has been thoroughly masticated, has no time to become properly softened and is likely to cause colic and other ailments. Coarse, rough foods should be carefully avoided, especially for hungry horses likely to bolt their food without proper mastication. Another point is that whereas cattle and sheep are able to digest and use a considerable percentage of the fibre (cellulose) of such foods as hay and straw, the horse digests very little indeed, as is apparent to any casual observer. As a matter of fact a horse derives very little nutriment at all from straw of any kind, and the more benty or straw-like the hay, the less he can get from it, so that it becomes necessary with all working horses to provide most of their nutriment in a concentrated and easily digested form, such as is found in oats, maize, beans, and other grain.

In some carefully conducted experiments it was found that to maintain a horse of 1,000lbs. live weight while at rest, with only half-an-hour's walking exercise per day, it required 19lbs. of hay per day, from which the animal was able to digest and use only ½lb. of albuminoids and 6½lbs. of carbo-hydrates. Another set of experiments showed that while a horse walking 12½ miles per day was able to maintain its condition on 19½lbs. of hay her day, 24lbs. of hay was insufficient to maintain its weight when the same distance was covered daily at a trot. Further, it was found that the horse when hauling a load for 12½ miles a day at a walk was quite sufficiently nourished by 26½lbs. of hay her day, he fell off in condition when the same distance was covered at a trot, although allowed all the hay he could eat, and he was consuming 32½lbs. per day. As a matter of fact, these experiments only put into definite figures the

experience of all observing farmers, for they demonstrate pretty clearly that the food requirements of the horse are influenced much more by the pace of the work than by the actual amount of work performed, and that hay is not at all well digested by horses. In the first experiment quoted above, only 37 per cent. of the hay was digested, but other experiments have shown the average runs between 40 and 60 per cent., and, quite contrary to the usually accepted ideas, soft leafy hay is much more digestible than that which is hard and benty, and new hay is more digestible than old. In comparison with the above figures, it may be noted that the digestibility of oats is about 75 per cent., of beans and barley about 85 per cent., and of maize about 90 per cent., so that with hay and other feeding stuffs at their present prices, oats, beans and maize are really cheaper than hay, as foods for horses.

It has been found that the proper quantity of nutrients that a horse requires to digest from his food per day per 1,000 lbs. live weight, are as follows :—

	Albuminoids. lb.	Carbo-hydrates. lb.	Fats. lb.
At light work ..	1.5	9.5	0.4
At medium work ..	2.0	11.0	0.6
At heavy work ..	2.5	13.3	0.8

These figures would require to be increased by about one-fourth for ordinary shire-bred farm horses, as their weight would run nearer 1,250lbs. Roughly, this would mean, taking the above figures given for medium work as those for light work in the heavier horses, those for heavy work as for medium, and would make the heavy-work figures: Albuminoids 3.1lbs.; carbo-hydrates 16.5lbs.; fats 1lb. It would be very seldom, however, that farm horses would want the heavy work rations, their work, owing to the fact that it is slow, being usually of the light or medium nature.

Supposing that it is desirable to use as little hay as possible, the following rations are suggested as supplying the requisite amount of nutrient material for horses of 1,250lbs. live weight, assuming the hay to be permanent grass or seeds of fairly good quality. For light work: Hay 14lbs., oats 12lbs., bran ½lb.; or hay 10lbs., oat straw chaff 4lbs., oats 12lbs., beans 1lb., bran 1lb.; or hay 14lbs., barley or maize 8lbs., beans 3lbs. For heavier work it is advisable to increase the more easily digested concentrated food rather than the hay, though, of course, a pound or two more of hay might be given if desired. The following typical rations are suggested for heavy work. Hay 14lbs., oats 14lbs., beans 1lb., bran 1lb.; or hay 14lbs., oats 7lbs., maize 7lbs., beans 4lbs., or hay

10lbs., oat straw chaff 4lbs., maize 8lbs., beans 8lbs., bran 1lb. Peas may be used in place of beans, crushed wheat may replace part of the oats, and crushed barley may partly replace maize, while a couple of pounds of dried grains or malt coombes may be given as a change in place of the same quantity of oats. A small quantity of one of the sugar or molasses feeds may be given in addition to any one of the above rations, but owing to the fact that these feeds contain practically no digestible albuminoids they should not be used in substitution, without being given in the proportions of $\frac{3}{4}$lb. of the sugar food and $\frac{1}{4}$lb. of beans for each 1lb. of oats or maize, withdrawn. Where pure clover hay is used, rather less albuminoids are necessary in the corn, owing to the greater quantity contained in the clover. The difference in the quantity of albuminoids contained in 14lbs. of clover hay over 14lbs. of average seeds or permanent grass hay will be about equal to that contained in 1lb. or $1\frac{1}{4}$lbs. of beans. It would, therefore, be possible to reduce the ration by that amount, or, if the work were extra hard, the clover hay, with 1lb, or so of sugar feed added, would provide nutrients suitable for a certain amount of extra work.

A diet of oats and grass hay by themselves cannot maintain a large horse in good condition if the work is at all hard. Where this is attempted, the horses cannot perform a hard day's work without undue fatigue, and if the work is continuous they rapidly sink in condition. Assuming that 3lb. of albuminoids per day were required by the horse, it would require 34lbs. of oats or 56lbs. of seeds hay to supply this. Any mixture of the two would be more than the horse would be likely to consume in the day, though if pure clover hay were used, of which 43lbs. supply 3lbs. of albuminoids, the horse could probably consume and digest 17lbs. of oats and 22lbs. of the hay. It is much more economical, however, to add a small quantity of beans of which only 14lbs. are necessary to provide 3lbs. of albuminoids. For quite light work the oats and hay will generally meet all the requirements of the animals.

In conclusion, it may be remarked that the chaff given to horses with their corn should not be so short as is commonly the case; from $\frac{3}{4}$ to 1 inch being about the correct length. When very short chaff is given they are apt, especially after a long spell of work, to bolt it without proper mastication, which they cannot do when it is fairly long. Straw chaff is best avoided, but if any is given it should be bright, clean, not too coarse, oat straw freshly chaffed each day with some hay. Musty straw chaff is responsible for a good deal of ill-health in horses. Straw for horses is only filling material, they get no nourishment of any practical value from it,

so that there is little necessity for its use. All corn should be cracked or crushed, but fine flours should not be used. Further, it may again be emphasised that horses do not want large quantities of bulky fodder, and that when racks are filled with large quantities of hay at night the animals are likely to eat a good deal more than they actually require, and waste the remainder. Hard working horses should have most of their food in a concentrated and easily digested form, given at short intervals as many times a day as possible.—"W.M.T." in *Farmer and Stockbreeder Year Book.*

Science and Agriculture.—Of what value is a scientific education to the practical farmer; and what lines should such an education follow? Some, although not so many as in former days, are prepared to say that such an education is of no value, and that the farmer who has least science and most practice is the man who can secure the best economic results. But it does not require profound erudition to prove that this declaration is based on very inadequate grounds. It is very much an assumption, and springs from the tendency in human nature to generalise on a particular instance. The question will have to be faced on broader lines, and a much fuller body of facts will require to be dealt with before a sound result is arrived at.

Agriculture is the art of so manipulating the soil and its products, animate and inanimate, as to yield the greatest amount of food and clothing for man, on the most economic terms. It is literally the cultivation of the field. And the "field" is not the arable land only, but all land on the surface of the globe, which in one way or other was designed by the Creator for the sustenance of man, the crown of His creation. It is a Bible statement containing the germ and kernel of all sound political economy, that "the earth is the Lord's and the fulness thereof." It is His in the last resort for the benefit of man, who was formed in the image of the Creator. Agriculture is the art by means of which the earth can be best made to serve this end. Economically, the aim of agriculture is to cause the earth to yield the greatest quantity of vegetables at the lowest possible cost, for the sustenance of man and beast. Agriculture, therefore, can only be successfully prosecuted by those who know how to attain these results. It involves a knowledge of the composition of soils, of the influence of climate upon soils, of the relation of soil and climate to plant growth, of the means whereby fertility in the soil can be maintained, of the relation of races of men and animals to soil, climate, and temperature; and it also involves a

knowledge of economic laws, of the principles that regulate supply and demand, and the relation of food to the animal frame. This analysis is not exhaustive, but it is sufficiently so to leave without excuse those who argue that agriculture can be prosecuted without knowledge. For what is science but knowledge? The word has come to be invested with a significance which deters many from coming to close quarters with the thing itself. Science, in the abstract sense of the term, is regarded as something beyond the ken of ordinary mortals. The scientific man is conceived of as at least a Sir Isaac Newton or a Lord Kelvin on a small scale, and the scientific agriculturist has been regarded as a person dwelling remote from the sons of men, a farmer whose methods are dictated by fellowship with unseen forces, who is a person altogether superior to the mere rank and file to be found on the flags of the market-place. But all this is dictated by a totally mistaken idea about science. Every one should be scientific who means to excel in any department of human activity. A scientific engineer is one who not only can put the component parts of the machinery together, and manipulate the starting-gear; he is one who understands the why and the wherefore of these component parts, and the relation in which they stand to one another and to the great force which sets them all in motion. Science alone can teach a farmer why certain soils will grow wheat, and certain other soils will more profitably grow barley; why beans require strong land, and potatoes free, friable, light land; why certain soils produce herbage that is strong and coarse and of very moderate feeding value, while other soils grow succulent grasses which have an attraction for stock. Science alone can teach the relation between fertilisers and soils; why certain manures are wasted when applied in certain combinations, and the same manures are sound, economical investments when otherwise applied. Science alone can show what principles must be adhered to if success in mating animals is to be followed by material results, in speedier maturing and more rapid monetary returns. In a word it is impossible to farm without science, and the more accurate and detailed the knowledge possessed by the farmer, the greater will be his agricultural and his economical profit.

What is a scientific education for the practical farmer? It is such an education as will enable him profitably to practice farming. There are men who farm for amusement, but these may be left out of account in this inquiry. That such do good service to agriculture must be frankly acknowledged, but schemes for educating farmers are not devised for their benefit. The constitution of the human mind and frame has so fashioned a large body of men that

for them the one vocation in life is the cultivation of the soil. A scientific education for them is the provision that agricultural colleges have to make, and the problem they have to solve is how to bring the farmer and the education provided for him into contact with one another. That problem will be solved by making the education such as the farmer can derive benefit from in his daily avocation.

I. *It must begin in the day school.* Unless a child be familiarised with the things of Nature as these unfold themselves to his awakening intelligence, he will prove a somewhat "dense" pupil when he reaches the benches of the agricultural college. The rural elementary school need not have a garden plot connected with it. If things are right at home, there will be a garden there; and if there is no garden, there are the fields by the way, and the plants and grasses which grow by the wayside. The child should be encouraged to gather these, to ask questions about them, and he should have his questions answered. He should be encouraged to question Nature herself, so that she may yield up her secrets in the animal as well as in the vegetable world. A child is naturally inquisitive. In the rural school this tendency in his nature should be directed along lines which will lead to the communication of facts bearing on the art of cultivating the soil and making the most profitable use of that which it produces. The primary necessity for success here is not a scheme drafted by the Department, but a teacher who is in love with the work. The appointment of a town-bred man or woman as teacher in a rural school is a proceeding only possible under a popularly-elected School Board, whose aim is to turn out a race of clerks and typists.

II. *It must be developed on the farm.* The student of agriculture who comes to the benches of an agricultural college without having been on a farm is largely losing his time. He is bringing the cause of agricultural education into disrepute. His presence in the college is a hindrance rather than a help to the scientific education of the practical farmer. It creates a prejudice against the system, and is responsible for some of the scepticism with which such education is still received. In no department of knowledge is this more evident than in that of botany. On no subject do the average field-workers know less than on that which is beneath their feet and ever present to their view. A very small minority indeed are those farmers who know the names and properties of the grasses which compose their pastures. Few crops have been grown more at haphazard than the crop which entails the least labour, and yields the speediest return. In a dairying district numerous questions present themselves on the

farms, and it ought to be the aim of a scientific education to answer these questions. The relation of food to the milk supply; the constituent parts of a food which will sustain the health of the cow, and promote the secretion and flow of milk; the successful production of a race of cattle at once sound in constitution and possessed of sound dairying properties—questions such as these will suggest themselves to the intelligent worker on the Western farm. And for those whose lot is cast in other localities, the problems are not less numerous and pressing. In the realm of rearing and feeding stock there is a whole zone of unexplored scientific ignorance. Regarding few subjects is less accurate information possessed than that of the relation between the food consumed and the beef or mutton produced. Whether the systems followed be economical or the reverse no one knows except in the haziest and most haphazard way. A reflecting mind will have all this and much else suggested to him as he pursues his daily round of farm duty.

III. *A scientific education does not include training in farm practice.* A theory prevails in some quarters that an agricultural college should be a training school in which men are taught "to plough and to sow, to reap and to mow, and to be a farmer's boy," but this is a pure delusion. It would be a waste of public money to expend it on highly-trained teachers, who in the end could not give instruction in these things anything like as well as those "who have never learned." Details of farm practice should all be taught on the farm. A scientific education for the engineer in the technical college does not consist in showing him how to put the component parts of the engine together. He learns that in the engine-shop. The farmer must learn the "How" of his business on the farm; the college will teach him the "Why." He will derive little practical benefit from a training in the "Why" if he has not already attained a fair measure of proficiency in the "How."

IV. *A scientific education in agriculture should be imparted in an agricultural atmosphere.* A college situated, as our three agricultural colleges in Scotland are, in the middle of a city may not be a joke, but it is certainly an incongruity. All three colleges endeavour to make up for deficiency in this respect by subjecting the students to a periodic agricultural atmosphere—say, once a week, or it may be only once a fortnight. It is the best they can do, but at its best it is only a makeshift. The medical student passes his time of study in about equal proportions between the lecture hall and the clinical ward. We would not like to trust our lives to the physician, no matter how numerous his degrees, who had only listened to pre-

lections, but had never walked the hospitals. And the agricultural student who has passed his hours in the agricultural college, and it may be taken many degrees and diplomas, is a poorly-equipped farmer when all is done. He has learned many things about farming, but he has learned nothing about how to farm. An agricultural college should certainly be planted in the country, and the students should be made familiar daily and hourly with the routine of farm work. They need not engage in it while they are actually pursuing their studies—these two things do not go well together—but they should be constantly in touch with the practical side of the business.

A practical farmer is one who cultivates the soil to produce in the last resort what the public want. He grows wheat, at first hand, to feed the people. He grows roots at first hand, to feed stock; but that is also in order to provide food and clothing for men. He keeps dairy cattle to produce milk, which, either in its primary form or as manufactured into butter or cheese, is food for human beings. It is his business to produce what the public want in such wise as will yield an economic advantage to himself. To this end he must produce not only what the public want, but he must produce it as the public want it. A method of agricultural education which fails to do this is not scientific. It may serve a useful end in many respects but it fails to attain the ideal. The practical farmer is a man who studies markets, and notes the changes in public taste. He does not persist because that may be his own fancy in producing a stiff, dry Cheddar which will be a good keeper. The connoisseur may demand that, but he is a limited quantity, and his custom would not make a trade. Or if the farmer be a flockmaster, he does not persist, although that may be his own fancy, in producing three-year-old wether mutton. That makes very fine eating, but there is only a very limited demand for such mutton, and the flockmasters who would cater for it would soon be ruined. Those who profess to give the practical farmer a scientific education must do so in such wise as will enable him to supply a public want and meet the most profitable market. An education which fails to do this is not scientific. It is not conveyed with knowledge. It ignores the teaching of the present, and inevitably brings discredit upon the system of which it forms a part. The one thing which will commend the teaching of schools and colleges to practical farmers is clear proof that, as a result, greater profit accrues to the agricultural industry. Anything short of this is fore-doomed to failure; but this, in any form, is assured of success.—*The Scottish Farmer.*

Farm Institutes in Relation to Agricultural Education.—Mr. J. C. Newsham recently read a paper on this subject before the

Farmers' Club, London, from which we take the following extracts:

Local requirements must influence any scheme of education designed to promote the welfare of agriculture, and the scientific or practical teaching of those whose livelihood is gained in our great national industry must be strictly in accordance with these circumstances.

With this in mind I will endeavour to outline in a brief and concise manner the position which the proposed Farm Institutes should occupy in relation to agricultural education.

It is undesirable that all Farm Institutes should in every respect approximate to one type. Certain aims they must have in common, and that part of the curriculum bearing directly on the purely educational side of the work will necessarily be of the same character throughout. The Farm Institute has a definite purpose to fulfil, viz., to enable young farmers to grasp more thoroughly the principles underlying the practice of agriculture.

It will not suffice merely to lay before the student a host of scientific truths and theories, but he must be taught actual farm practice, so that he may the better understand wherein science can help him in his industry. Further, it is essential that his physical, mental, and moral faculties should also be developed. There must be both education and instruction—two quite distinct things. All that one can hope to accomplish in the short space of six or twelve months is to put the student in the way of acquiring knowledge, and, after all, if we are successful in turning out a thinking man who will continue his self-education we are probably accomplishing the best educational purpose of all.

A farm school should be centrally situated; it must be remembered that it forms but a part of the county education system, and must be linked up with it.

The site, the character of the soil, and the other essential qualifications need not necessarily be the best obtainable, but they should at least be typical of the county.

As regards the actual equipment of the farm, any unnecessary expense would prejudice the mind of the farmer against the school. Where new buildings are to be erected they should include such modern improvements as have proved of real practical value. Every building, it must be remembered, has a dual purpose to fulfil, for practical demonstrations will have to be given in it, whether the building takes the form of stables, cowhouse, pigsty, greenhouse, fruitroom, or implement shed. Not only does it form a business part of the farm, but it serves as what may be called a farm class-room.

The several departments of a Farm Institute may be classed as follows:—School, farm, dairy, and garden, but the first really comprises the others. It will include a suitable class-room and laboratory, together with the necessary equipment and fittings.

It is difficult to frame a curriculum which provides the greatest possible amount of suitable instruction for the student in the short space of six or twelve months, and which is yet within his powers of assimilation. To convey instruction by means of lectures doubtless serves to inform and direct the thought of youths who are undergoing a process of mental training, but too much reliance is often placed on them, and as a rule they act as little more than incentives to study.

It must be remembered that not only are the fields the main class-rooms of the school, but the practical work of the farm should be demonstrated to the students and practised by them in such manner that they may gain proficiency and understand the principles involved in the shortest possible space of time. In fact, the main object in view must be to encourage every student to practise his work under proper direction, so that he may come to rely upon his own ingenuity and rapidly gain confidence in himself.

It is desirable that each farm school or institute should be affiliated in some way to an agricultural college.

After some twelve years' experience in the management of a farm school, I am convinced that the best time for a boy to enter such an institution is as soon as he leaves an elementary or secondary school, for should he be induced to engage himself for two years' preparatory work on his father's or some other farm, commencing, say, at the age of fourteen or fifteen, this would involve a monetary sacrifice that the father could ill afford. The youth would, for many reasons, commence his farming career under the guardianship of his parents, as to maintain him elsewhere would entail a minimum cost of from £26 to £50 a year for the two years.

If he were to hire himself out as a labourer no opportunity whatever would be afforded for his mental or physical improvement, and his environment would not be such as would stimulate his young mind towards educational advancement; and further, he would not be taught his work properly, but would have to "pick it up."

The really important point is to get a lad into your hands early, whereby good habits are formed and correct methods of farming implanted into his mind, so that there is less error later to remove. The very fact of a youth having been engaged under a dilatory master for two years, or even but one, may check his progress for

a like period on entering the school, and it will be difficult to eradicate the bad habits or wrong methods that he may have acquired.

They will certainly have little prospect of success after leaving school, until continuous exertion of mind and body during stated hours and prompt obedience to those placed above them have ceased to be irksome. I feel convinced that many former students at our schools and colleges fail in their business as farmers, not because of their ignorance of how to cultivate the soil and rear live stock, etc., but because of casual and slipshod habits, which lead to carelessness in buying and selling, inaccuracy in keeping accounts, and indifference in regard to the supervision of labour.

Students who leave our school at the termination of the course find employment on farms, which offers facilities for increasing their experience, and though in some instances remuneration may consist solely of board and lodging, the majority receive from 5s. to 10s. per week in addition.

Instances of real failure are very rare, for the simple reason that practically all students are the sons of tenant-farmers, and should they prove themselves unworthy of the advantages offered by the school, or appear in any way likely to exert a bad influence on other students, they are dismissed after one month's probation.

Considering the age of the student the amount to be taught, and the shortness of the course, it is only the earnest, hard-working boy who really profits. Students who have acquired reckless habits, as is so often the case with those who reside near towns and attend markets and sales with no definite purpose in view, may, even at the tender age of sixteen or seventeen, prove anything but suitable material for the staff of an institution to bestow their best energies on with the hope of turning out a creditable pupil within the short space of twelve months.

The case of the small holder demands special attention, for he may be considered as the new factor in the problem, and his needs may involve the recasting of some of our work. If the smallholder is to benefit in any way by a system of agricultural education, it will undoubtedly be through the medium of the Farm Institute. This will probably have to be done in two ways; by the younger generation coming to the school and by the older generation being helped at the home, such practical advice being given to them as will conduce towards a better condition of things commercially. Judging from the questions I am asked, many smallholders clearly know little about farming; they cannot afford time, except on rare occasions, to attend markets, and so, except for the information

conveyed through the medium of the agricultural press, they are isolated from the wider agricultural world.

Some years ago I visited numerous small-holdings in Hampshire, and was able to form a very clear idea of the means of livelihood possessed by the tenants. The great majority had committed serious errors of judgment, not only in the selection of the holdings, but also in selecting their stock. The successful small-holders appeared to be those who combined some other occupation, such as that of carrier or village shopkeeper, with farming. Many of these, I am glad to say, have encouraged their sons and daughters to take full advantage of scholarships offered, permitting them to enter the farm school at the nominal cost of 2s. per week, while they themselves have either written or visited the school for advice.

Peripatetic classes in dairying and horticulture are usually well supported by small-holders, as well as by their sons and daughters, while in the fruit-growing districts of the county audiences largely composed of " growers " are not uncommon. Co-operative methods to benefit small-holders could also be advantageously dealt with at a Farm Institute.

Improving Store Stock.—It is universally acknowledged that the United Kingdom holds the unique position of being the home of the best breeds of pedigree cattle in the world.

A number of years ago an American citizen, and a well-known authority on all live stock matters, wrote in the *Breeders' Gazette*, Chicago, a very appreciative article upon the excellence of the herds of pedigree cattle which he had seen in Great Britain. He finished, however, by asking where the large number of what he called " worthless scallywags " came from which he saw in the pastures, and also offered for sale as store stock at the fairs and markets which he visited.

Were he to visit this country again it may safely be assumed that he would find quite as large a proportion of our store stock of the same worthless character, although, owing principally to the great foreign demand for pedigree cattle which has been experienced of late years, the number of herds of pure-bred cattle in the United Kingdom has greatly increased.

With the increase of pedigree herds one would naturally look for and expect to find improvement in the whole cattle stock in the country. The object of this short paper is to draw attention to a few of the causes of inattention to the general improvement of the ordinary cattle of the country, and with all diffidence to suggest a workable national scheme to remedy matters.

The inferiority of the store stock of the country may be attributed in a large degree to the four following causes, viz. :—The use of inferior bulls in dairy herds, the want of care and attention in the rearing of calves, the increase in the number of co-operative dairies, and the unfortunate opinion which has been accepted by many pedigree cattle breeders that a deep milking cow must be of a weedy formation which unfits her to breed a bull to beget a strong-constituted thrifty store animal.

An increasing number of farmers have become milk sellers, and have very little interest in the class of cattle they breed. The whole produce of their holdings is consumed by cows, and such calves as are dropped are sold a few days after birth for what they will bring. Got as these are, in too many cases, by non-pedigree bulls, they develop with age into the class our American friend was so much astonished to find in such large numbers in the country.

A most successful breeder and feeder in the north of Scotland, explaining his system of management, said he bought a few calves every year so that his cows, beyond supplying his household with milk and rearing their own calves, were expected to rear one bought calf for every third cow he owned. He often paid as much as £4 for a calf at a week old, for he would rather give such a price for a calf got by a good bull than take one as a gift got by an inferior sire.

There is, unfortunately, in many districts a great lack of attention on the part of owners to the proper rearing of calves. with the consequence that their young stock grow up stunted in growth and thriftless food consumers, whereas attention to the comfort of the youngsters and a less careless system of management would mean the possession of a very different and better class of young stock.

Reference has been made to the increase in the number of co-operative dairies and their effect upon the quality of the store stock. The writer has seen many instances where, with careful management, calves have been well reared on milk returned from the creameries after the butter fat had been extracted and to which a less expensive substitute for the cream had been added. But it is unfortunately a fact that in many creamery districts the quality of the store cattle has been on the down grade.

Of late years there has been evidence of a growing opinion amongst a section of breeders of pedigree cattle that an animal to be a good milch cow must be of a peculiar shape, and altogether different from that of the time-honoured standard of excellence. But the wonderful exhibition of pure-bred Shorthorn cows to be seen in the dairy classes at shows will do much to check such extreme ideas, and must have a very reassuring effect on the minds of those who do not wish

to see this old-established breed become other than a general purpose one. If the extreme section of Shorthorn breeders had their way Shorthorn males would become worthless as sires of grazing stock, and in short would be no longer Shorthorns.

We confidently believe that the assumed necessity of changing the conformation of this breed, which has done so much for the cattle of the world, has neither scientific nor practical data to support it.

For the improvement of the ordinary cattle of the country, much can be said in favour of some such system as has been pursued for many years in Ireland with great success. No doubt the Irish system means a Government subsidy in some shape or form, and for this reason it may not be looked upon with favour by many in Great Britain; yet the Irish scheme might be boiled down to suit the circumstances of the larger country. A short history of the scheme for the improvement of cattle in Ireland may not be out of place.

For a number of years before the Irish Department of Agriculture came into existence the Royal Dublin Society administered, free of expense, a Government grant of £5,000 for the improvement of horses and cattle in Ireland. Some £1,500 of this was set apart for cattle, and given in premiums for pure-bred bulls considered suitable to improve the cattle of the country. The owners of such bulls were at the end of a season each paid a premium of from £10 to £15 if the animal had served a certain number of cows belonging to small farmers or crofters, at a nominal fee.

When the Department of Agriculture came into existence the Society voluntarily handed over the entire sum to be administered by the Department—a body that had already practically adopted the Society's scheme upon a much more extended basis. For a number of years past nearly 1,000 pure-bred premium bulls have been standing in Ireland doing much to improve the cattle of the country. That the system has succeeded in improving the cattle in Ireland is acknowledged by cattle graziers in all districts of Great Britain who depend upon Irish-bred cattle for their supply of stores.

Under the scheme of the Irish Department a loan system has been organised by which men unable to purchase a good bull can borrow the wherewithal, or any portion of it, from the Department at a reasonable rate of interest. The bull and his price must be approved by an inspector, must be insured at his full value, and be actually the property of the Department until the whole purchase price has been repaid. As an indication of how easily such payment can be made an instance is given of a bull bought at, say, £40. During

the first year he earns a £15 premium. If well cared for, to the satisfaction of an inspector, he may get a second, third, and sometimes a fourth year's premium of £15, and under the conditions of his contract, one shilling from the owner of each cow served.

Such is the system which is doing good work in Ireland. It is not suggested that this premium scheme as worked in Ireland, entailing as it does a large Government subsidy, should be adopted in Great Britain; but a properly secured loan scheme, costing the Government nothing, would no doubt tend to a much more extensive use of better sires than those that have been in a great degree responsible for our American friend's "scallywags."

The granting of loans to farmers for the purchase of suitable sires might be placed under the supervision of the District Councils, who would be intimately acquainted with the needs of the districts, the financial position of the applicants, the proposed location of the bulls, and the value of the security that the terms of the agreements as to the proper treatment of the animals and other conditions would be carried out.—ROBERT BRUCE in *Live Stock Journal Almanac.*

Longwool Hill Breeds of Sheep.—There are two types of hill sheep—the longwool and the shortwool. It is with the former that I propose to deal in this article. We are singularly fortunate in this country in having a wide choice of breeds. It appears to be a characteristic of British stock breeding to produce and multiply types, each specially adapted to a locality and for a special purpose. Amongst hill breeds this peculiarity is not dormant, for our greatest diversity of type is to be found amongst them. Thus we might contrast the Southdown, which is first of all a down or hill breed, with the Lonk, which inhabits the heights of North Lancashire and part of Yorkshire. Or, again, the Kerry hill sheep of Montgomeryshire compares oddly with the Wensleydale, which exists on the heights of that part of Yorkshire where constitutional vigour is primarily associated with all kinds of stock which win a living from very poor and barren fare. Consideration of the longwool hill breeds invites attention chiefly to the Welsh mountain sheep, the Wensleydale (which provides the famous "Yorkshire" rams for the lowlands of Scotland), the Lonk, the Herdwick, the Gritstone, the Cheviot, and the Scottish blackfaced breeds. As a rule the lowland breeds are much more familiar to the average stock owner than those which subsist on the altitudes of the country. Hence the greater necessity of keeping in touch with the characteristics of hill sheep raising and the aims of the more intelligent sheep farmers.

It may at once be conceded that hill sheep farmers have seldom

had a better time than during the past few years. The high prices for wool, no less than the vigorous demand for mutton, have increased their financial resources and given a new lease of life to the improvement of hill pasture land. In Wales the Welsh sheep comes first. It stands in the same relation to the Principality that the blackfaced sheep does to Scotland, being found north, south, east, and west. Welsh mutton has a reputation of its own, and the aim of Cymric sheep breeders has been to introduce more speedy maturity, and with it greater weight. Of course, with the real Welsh hill sheep this is well-nigh impossible, for the bare eastern slopes of the northern mountain ranges will only support a small sheep, and, be it noted, the name of Welsh mutton was won with sheep of small stature. When we come lower down the country into the valley it is here that we find the more growthy sheep which will produce more than a 5lb. to 7lb. leg of mutton.

What in Scotland is known as the "Hirsel" system is pursued in Wales. The sheep stocks that become acclimatised have a few shillings per head higher value to a tenant than sheep which are strangers to a mountain side. They are less given to straying, and, being therefore more contented, are better doers, and can be more speedily turned into money. The tendency towards early maturity is noticeable in many ways. Thus the introduction of alien rams, such as the Cheviot, has doubtless been suggested by reason of its more compact form and thicker fleece. The old rusty, mottled face is still characteristic of the breed, but the showyard seems to have encouraged a variety of types which the true Welsh hill sheep owner will have no difficulty in discarding, but the average show judge is prone to favour. The types most frequently seen in public competition are, first, the old small Welsh sheep—the true variety, with a slightly mottled face; a neat, compact sheep, with a rather light fore end, and a fleece that is strong rather than soft. Another species is larger than this, rather lank in the limb, flat ribbed, bare topped, and with indifferent fleece. That type the writer has on occasions seen win. Here we may find an almost perfect Dorset Horn type in head and form, with the same square quarter which distinguishes the south of England breed. The Cheviot type, it must needs be admitted, is one of the sweetest of the lot. In nothing has the Cheviot more altered some flocks than in the carriage of the sheep and the fleece it carries. A Cheviot fleece can never be mistaken. The tendency to early maturity will creep in even by the back door. The use of Welsh ewes for the production of early lamb is one method, and the premium which some breeders appear to put on

size is another. In hill breeds which have to make cheap hill land profitable it is doubtful if the early maturity fad is not carried too far. It is very apt to weaken the constitution, for, be it remembered, the quality of maturing early can never be fixed without resolute feeding.

The Derbyshire Gritstone sheep is not much known outside of the Peak District and contiguous parts of Cheshire and Staffordshire. At one time it was known as the old Dale of Goyt sheep. The modern appellation has doubtless been suggested by the distinctive characteristics of the county. It takes an active man to keep up with this agile breed, whose mottled faces remind one of the Kerry hill sheep. There, however, the resemblance ends. They are a very gay breed, with finer wool than most longwool hill sheep exposed to the rigours of the climate at 1,600 feet above the sea level. In yeoman families flocks of these sheep have been in continuous possession for about 150 years, so that while in some cases other strains have been introduced, including a white horned breed, there are many flocks which preserve the original character of the breed unimpaired. A good sheep will turn out a carcase weight from 16lbs. to 19lbs. per quarter. The butchers in the fashionable health resorts of the Peak county profess a great liking for the breed. The ewes are good mothers, the flocks being, of course, wintered on the lowlands, the wintering costing from 4s. to 6s. per head. The ewes are crossed for the production of fat lamb in the lowlands of the neighbouring counties. The Shropshire and the Lincoln ram appear to be the favourite crosses. The lambs can be sold off in the height of summer at the end of June up to 2gs. each, so that the cross must be reckoned highly profitable. These fat lambs can be reared at good altitudes up to 1,000 feet, and come off grass land which by no stretch of imagination can be called rich. It is interesting to note that the Derbyshire Gritstone Sheep Breeders' Society, which recently held its first annual meeting has decided to individually register each ewe, ram, and lamb. This is a step of the first importance, being, for a new society, a bold experiment, which other societies will watch with interest.

The Lonk sheep introduces us to one of the most distinctive types of hill sheep which this country possesses. In some respects they are not unlike the type that permeates the hill black-faced breed of Scotland, which penetrates into the Yorkshire moors, only they are of greater stature, and their fleece is of a different quality. Breeders claim for it that it represents the leanest mutton sheep in this country, there being very little waste in the big carcases. Their mode of life has made them hardy, while in recent times as

much as 1s. 2d. per pound has been made for the clips of the best flocks, and when it is remembered that a usual clip is about 9lbs. or 10lbs. the importance of having quality in the fleece becomes apparent. Rams got up for show, of course, shear more, as much as 17lbs. being clipped from first-class specimens. The elimination of black wool is gradually being accomplished, though no hill breed of this longwool type is likely ever to be free from it. Breeders are right in keeping to size and substance, strong bone being reckoned a primary consideration. For crossing purposes the Lonk sheep is locally in favour, the most popular crosses being the Wensleydale and the Lincoln.

No greater contrast could be afforded than between the Lonk and its comparatively near neighbour, the Herdwick. The latter lives in the wild fastnesses of the fells, which it scales with the agility and surefootedness of a chamois. It is one of those breeds which no one appears to know anything of historically, therefore it is assumed that when Spain's galleons were scattered by Drake, Howard and Frobisher, to be wrecked on our northern shores, some of the sheep escaped and formed a fresh breed. It was a happy idea for the historian, this peaceful Spanish conquest on our hills, but it breaks out with such terrible frequency when history is silent concerning the origin of a breed that its repetition becomes monotonous. At all events, they have a very hardy, useful, and active breed in Cumberland and Westmorland. Indeed, it is not stretching the truth to say that a Herdwick sheep will more than hold its own for capacity to exist and thrive on the most Spartan fare.

Properly speaking, the Wensleydale is a hill sheep, for it exists at high altitudes. It is, nevertheless, so much of the Border Leicester type in respect of fleece and form that one is more apt to associate it with the sheltered pasture and the valley than the mountain. This breed exercises a prodominant influence in the north, where there is a great demand for rams for crossing purposes. For instance, like the Border Leicester it gives birth to a locally distinctive type of sheep known as the Masham, no doubt called after the market where they were originally sold. The Masham is the result of a cross between the Scotch black-faced ewe and the Wensleydale ram. It is hardly necessary to enter into the merits of the dispute between the flock books, and the influence which the Leicester and the Lincoln cross at one time excited. Suffice it to say that the Wensleydale shares with the Leicester the affections of the Yorkshire farmer. The Leicester, of course, is more prominently associated with the wolds—indeed, it is part and parcel

of their distinctive style of farming. The old Teeswater sheep was the origin of the Wensleydale through a variety known as the Mugs, which were introduced into Wensleydale about 150 years ago. The Wensleydale ram is particularly valuable for crossing, because he ingrafts to his progeny his own weight-producing qualities. Lambs have been known to gain at the rate of over 1lb. per day, and no doubt this peculiarity is responsible for their popularity in the south of Scotland and the northerly part of England.

The Scotch black-faced sheep is one of the two hill breeds which find favour over the Border. It is scattered up and down the country, finding a living on lands which are not capable of carrying larger sheep, in fact, in some cases being dispossessed by deer. There are two kinds of Scotch black-faced sheep. One set of breeders in the south have set themselves with some success to inculcate early maturity, with the result that they get a comparatively big sheep as a yearling wether. This policy has its adherents but they are not to be counted amongst the Perthshire, Argyllshire, Inverness, Sutherland, and Caithness hills. The climate in the south of Scotland is by no means so severe as in the north, and many of the breeders of black-faced sheep are arable farmers in quite a mild climate. Consequently, it is of importance to them to get rid of their wethers at an earlier age, and, as far as possible, to get a fleece of better quality, which is not called upon to resist such storms as visit the higher altitude of the country. Hence the dissension and difference of opinion manifested over the quality of the hill black-faced sheep's fleece, the maintenance of constitution, and other problems which arise from forced feeding and keeping under more or less artificial conditions. On the whole, however, it may be said that even on bare hill farms it would be an advantage were wethers turned off as two-year-olds where hitherto they had taken three years to mature. The flock of ewes could then be reinforced, for the turnover of the sheep farmer would be accelerated.

Lastly, the Cheviot. Here we have one of the most picturesque of all our breeds. The alert eye, gay carriage, and fine, compact frame give an air of distinction and breeding to this prime favourite on Borderland. It is difficult to say whether the Cheviot derives most of its fame as a pure breed or from its wonderful qualities for crossing purposes. At one time the tendency was to run after small and pretty sheep, and the best are not too big to-day; but the error of allowing commercial qualities to be sacrificed for appearance was not committed beyond hope of repair. The north of Scotland Cheviot, which earns a living in Sutherland and Caithness, differs materially from the southern type. At one time the most

rent-paying sheep in Borderland was the half-bred, a cross between the Border Leicester and the Cheviot, and while it still retains that distinction, there is a rapid change in the type of lamb reared for the fat markets through the introduction of the Oxford Down and Suffolk rams.—" COR. " in *The Field.*

The National Insurance Act.—In this article we intend to consider :—

(1).—What the National Insurance Act proposes to do.

(2).—How the contemplated end is to be attained.

(3).—How the operations of the Act bear upon employers and employed in agriculture.

I.—OBJECT.

The object of the Act is to make universal by State enactment for something like 14,500,000 employees, male and female, in Great Britain and Ireland, what is at present voluntarily being done by about 4,500,000 of the artisan population. It is calculated by those who have the data on which to base such conclusions that at least 30 per cent, or one-third, of the pauperism of this country is due to sickness. At present something like 6½ millions are insured against sickness. Under this measure the number will be more than doubled. The root idea of the measure is that thrift is a virtue that can be made compulsory, and that the effect of State interference with, and to a large extent control over, the work hitherto done exclusively by the friendly societies and some of the trade combinations, will be to confer upon the thriftless and the improvident the benefits which the thrifty and the provident have hitherto enjoyed through the exercise of the virtues of self-denial and industry. The benefits which are thus to be enforced cannot be realised without some loss, and there is point in the comment of one writer that " the compulsory thrift of the future can never be the same thing as the voluntary thrift of the past." It is admitted that the operation of a kindred scheme in Germany has led to a considerable increase in the rate of insurance for sickness ; in other words, the compulsory character of the scheme leads to a greater readiness to acknowledge sickness, and it also tends to put a premium on malingering. The Act insures against loss of health, and provides for the prevention and cure of sickness, and in its second part, within a certain area of industry, insures against unemployment. In its third part are to be found miscellaneous provisions for carrying

out the purposes detailed in the first and second parts. The first part alone concerns those engaged in agriculture, as this is not one of the industries embraced in the provisions of the second part.

Liability for Accidents.

It is to be observed at the outset that the Act does not affect the incidence of the existing liability of employers for accidents. Provision is made to ensure that benefits under the scheme will not be paid to persons who are rendered incapable of work through accidents for which the employers are held liable. To put this in another form, an employee cannot derive benefit at one and the same time under the Employers' Liability Acts and the National Insurance Act. If he gets the one, he does not get the other.

Direct Objects.

A special attempt is to be made under the Act to grapple with consumption, a large proportion of the capital being ear-marked for sanatoria. The Act will operate to the great advantage of the many married women engaged in the textile industries, and to the wives of men engaged in these industries, even although the women themselves should not be insured. The maternity benefits are, from the point of view of the well-being of the race, and the health of its mothers, not the least meritorious. It is probable that here, rather than in directions about which more is being said, the benefits to the nation will be most conspicuously illustrated.

Date of the Act.

The Act is to come into operation on 15th July, 1912; but, recognising the possibilities of delay in setting its machinery in motion, on account of its novelty and extreme complexity, power is given to the King in Council to substitute any later date up to 1st January, 1913, as regards Part I., and 1st October, 1912, as regards Part II. Keeping in view the arrangements for making known the working of the Act, which Mr. Leishman and his colleagues have tentatively announced, it seems more than likely that the Act will not be in operation at the earliest of the three dates.

Benefits.

The benefits which the Act proposes to confer are summed up under the heads of Medical, Sanatorium, Sickness, Disablement and Maternity. Under the first the insured will receive free medical attention and medicine. He or she will be entitled to claim the free attendance and advice of any of the doctors who are on the panel

for the district in which the insured resides. This benefit will not be available until six months after the Act comes into operation —that is, until six months after the insured begins to pay premiums. Under this head also is included free medicine from any chemist whose name is on the panel of the local or district Insurance Committee.

Sanatorium benefit means treatment in sanatoria or other institutions, or in other ways, for those suffering from tuberculosis. Other diseases may also, in the option of the Local Government Board, be scheduled, and similar treatment be secured to patients affected with them.

Sickness benefit is defined "as periodical payments whilst rendered incapable of work by some specific disease or by bodily or mental disablement, of which notice has been given, commencing from the fourth day after being so rendered incapable of work, and continuing for a period not exceeding 26 weeks." This right does not take effect until a person has been insured for 26 weeks, and 26 contributions have been paid by or in respect of him. The ordinary rates of sick benefit are: Men, 10s. for 26 weeks; women, 7s. 6d. for the same period: if 21 years of age and not over 50. If under 21 and unmarried, the benefit is on a reduced scale, and if over 50 and under 70 it is 5s. for men and 4s. for women, but it ceases at 70, when the old-age pension comes into force.

Disablement benefit consists of 5s. a week for men, women, and boys, and 4s. a week for spinsters under 21. But this benefit does not operate until the person has been two years insured, and 104 contributions have been paid by or in respect of him. These are the broad outlines with respect to benefit. There are some exceptions and arrangements for rebatements, but the main features are as set forth.

II.—How the Ends are to be Attained.

Around this section the conflict raged while the Bill was being thrashed into shape in the House of Commson.

Definition of "Employed."

All persons employed and earning less than £160 per annum by manual labour, which figure is to cover every form of perquisite in addition to money payments, must be insured. Responsibility for payment of the premiums lies upon the employer, but the employee is responsible for seeing that the employer has opportunity of paying. The employee must get the card from the insurance office, and present it to the employer. The employer is responsible

for the payments, and a penalty of £10 is exigible for any attempt at collusion to evade insurance on the part of employer and (or) employed. Every person of either sex, and of any nationality, provided they are "employed" within the meaning of the schedules, and of age between 16 and 65, must be insured. Persons are "employed" whether they are paid by time or by piecework. A "mud pupil," who works, is, we take it, not one of the "employed." Among the exceptions to the general rules is: "Employment in respect of which no wages or other money payment is made when the employer is the occupier of an agricultural holding, and the employed person is employed thereon, or when the employed person is the child of or is maintained by the employer." The following exceptions in Section I. (4) *i* and *j* have an interest for dairy farmers in particular, as the definitions there appear to cover milkers. (*i*) "Employment of any class which may be specified in a special order as being of such a nature that it is ordinarily adopted as subsidiary employment only, and not as the principal means of livelihood. (*j*) Employment as an outworker when the person so employed is the wife of an insured person, and is not wholly or mainly dependent on her earnings in such employment." Small tradesmen on their own account can insure as voluntary contributors, paying both employer and employee rate.

Rates.

The rates payable are 4d. per week by each male employee, and 3d. per week by each female employee, with 3d. for each by the employer, and 2d. added for each by the State. That is to say, the full premium for each male "employed" person between the prescribed ages is 9d. per week, and for each female "employed" person 8d. per week. The employer is responsible for the collection of the premiums from his employees—4d. from the male and 3d. from the female per week—and the method in which he does this collecting is simplicity itself. The employee obtains a card from the insurance officer, and he or she retains that card. It has spaces for affixing stamps, and the employer must affix stamps to the value of sevenpence weekly to each card held by a male servant, and of sixpence weekly to each card held by a female servant. He is entitled to deduct 4d. from the wages of the one, and 3d. from the wages of the other as their share of the premium. In the case of employees of the age of 21 years and upwards, who are paid not more than 2s. 6d. a working day, the weekly payment by the employer under the Act varies from 3d. to 6d., and that by the employee from 3d. to nil. To this duty of collecting rates for

the State, a large number of employers emphatically demur, and in some cases farmers have passed resolutions binding themselves to defy the law, and refuse to become tax collectors. Others, indeed all farmers and farmers' associations which have dealt with the subject, have recorded the fear that the performance of this duty by them will lead to a disturbance of the pleasant relationships which have generally obtained between master and servant in the agricultural industry. We express no opinion on the subject, but can see how these fears may be realised.

III.—How Agriculture is Affected.

It is argued that those employed in agricultural pursuits are more healthy than those who follow occupations of an indoor character.

Special Case of Outdoor Workers.

Looking at the matter broadly, there can be no doubt that this is true. Unfortunately, however, data to support the claim in an actuarial sense are scanty, and it cannot be said that the exact superiority of the outdoor life was demonstrated in Parliament. The case, however, has been dealt with, and is supposed to have been met by Section 47. At the moment the question before farmers and their employees is, Whether are they better to accept the general provisions of the Act, pay their employed rate of sevenpence per week for men, and sixpence per week for women, and rank on the fund, and on the fund alone, when sickness ensues, or to accept the special arrangements of Section 47, under which the employed rate is reduced to fivepence for men and fourpence halfpenny for women, but in a case of sickness the employer incurs a legal obligation to keep the servant for a period of six weeks, and pay all medical and other costs? The East Lothian Farmers' Club resolved emphatically in favour of the first alternative, and it does not appear that any other course would be safe. The scheme of Section 47 is extremely complicated. It gives statutory sanction to a proceeding which has only the sanction of partial custom at present, and it involves the employer of the farm labourer, the clerk, and the domestic servant in an unknown liability. Not only will the employer be bound to pay full wages for six weeks, but while the period of his liability lasts the servant will draw no sick pay from the Approved Society or the Insurance Committee. There is the possibility of an employer who adopts Section 47 having to pay, in the case of a servant earning 15s. per week, the sum of £4 10s.

Against this he has a reduction in his own share of the "employed rate" of one penny per week, or 4s. 4d. per annum, and he cannot pick and choose among his servants. If he puts one under Section 47, he must put all. The likelihood, therefore, is that the great majority of agricultural employers will follow the lead of the East Lothian Club.

CASUAL LABOUR.

Another point in which the Act bears hardly on agriculture is in respect of casual labour. In cases where a contributor is employed by more than one employer in any calendar week, the person first employing him in that week shall be deemed to be the employer for the purpose of making the contribution in respect of that week. A person employing a charwoman on the Monday or Tuesday in a week will have sixpence to pay—*i.e.*, 3d. for the employer and 3d. for the employee, and this holds even if the woman should work the rest of the week for other employers. Further, the casual labourer who works only one day in the week will have 4d. deducted from his one day's pay, and his employer will have to pay 3d. on his account. From the employer's point of view, the opinion of one writer is that the operation of this clause will be an incentive wherever possible to resort to machinery and dispense with paid labour. The case of milkers who come morning and evening is not easy to make out. As we read Section 7 (4) *i* and *j*, and Schedule I., Part II., already referred to, they would seem to be excluded, and the books consulted do not throw any light on the question. Certainly the ploughman's wife who milks morning and evening only does so as a subsidiary means of income, and the work does not take up a very large portion of her time each day.—A. MACNEILAGE in *Scottish Farmer*.

Polo Pony Breeding.—The problem of breeding polo ponies of of the right type is one that has been to a great extent solved. The point that gave some difficulty was to get the ponies sufficiently large for the requirements of modern polo. Numbers of ponies were bred which had the chief qualities required—pace, balance, temper, and endurance—but which fell short of the demands of the modern polo-player in size and scope. The problem which is pressing for immediate solution is—how can we combine the qualities of the true pony type with something of the pace of the thoroughbred?

The idea of the polo pony in the minds of players has changed almost imperceptibly as years have gone on, while the style of play has altered. We notice the gradual disappearance from the show

ring, and still more from the polo ground, of what is generally known as the heavy-weight pony. Looking back over the last twenty years, I see a great change of the type of weight-carrying pony. The heavy-bodied, big-limbed ponies for which large prices used to be asked and given—for the bigger men did not feel themselves sufficiently well mounted unless they had such ponies—have gradually ceased to be desired, and even the heaviest players now prefer blood ponies, provided they have the requisite make and shape.

It is, in fact, impossible to obtain the size and substance for which we used to look, or perhaps it would be more correct to say the appearance of those qualities, without some admixture of coarser strains. And at this point it may perhaps be suggested to me that the pony blood which some of us so greatly value, and the desirability of which in the polo pony Captain E. D. Miller has re-affirmed in the last edition of *Modern Polo*, is in itself a coarser strain. But this, of course, is not what I mean. The native pony, or at all events those ponies whose blood is to be found in our polo studs, is in no sense a coarsely bred animal. His roughness, and occasional apparent meanness of shape, are the results of the struggle for existence of his parents in their long battle with cold winters, insufficient pasturage, and the hard conditions of mountain and moorland life. But in the big weight-carrier there is often a touch of coarseness which suggests a stain of roadster or cart blood in his pedigree. Of course, we never hear of these stains, but it is interesting to observe that whenever a weight-carrying pony makes its appearance at a show its pedigree is involved in darkness, except in the rare case of its being absolutely thoroughbred. In fact, where good blood is raised under adverse conditions the tendency is, as we see in the case of the Arab and our mountain and moorland ponies, not in the direction of coarseness, but of meanness, ill-put-on-necks, and drooping quarters.

The type of polo pony which finds favour amongst modern players—and the demand for which is likely to increase now the offside rule has disappeared from the game—we find at the top of the light-weight classes, and still more frequently in the middle-weight classes at our shows. Those who have watched the judging during the past year will have been struck by the frequency with which the polo-bred pony has come to the front when polo-playing judges have been in the ring. It may be assumed that these judges saw in these ponies a realization of their ideal of the sort of pony they would like to play on. Certain characteristics marked these ponies—first, quality; and the possession of sufficient bone of that hard, close-knit character which marks out well-bred horses, which

is one of the legacies our thoroughbreds derive from their Eastern ancestors. Secondly, the true balance of these ponies, a quality in which thoroughbreds not infrequently fail. Not too safe to ride, the unbalanced thoroughbred, though fast enough when it comes to a hard gallop, is seldom quick enough, for want of balance. The ill-balanced pony is neither easy to stop nor to turn. Nor does it, as a rule, possess that rapidity in springing off which has made some quite second-rate ponies remarkable at polo. Thirdly, these ponies have good shoulders and an easy slope of the pasterns. It is just in these two last points that thoroughbreds are apt to fail, and unless a pony has a free use of its shoulders and sufficient spring in its pasterns it is unlikely that it will make a first-class polo pony.

In practice we find that the best players generally mount themselves on ponies that would be classed by judges as middle and light weight ponies, for it is beginning to be understood that size and substance are no compensation for want of balance and activity. How, then, are we to set about breeding ponies of this stamp? In the first place, blood is necessary, and not merely an unstained pedigree, for we desire to derive the thoroughbred strain from one of the winning families of Turf history. However, we cannot look to pure blood to supply us with the ponies we require. Here and there, of course, there is one, but we evidently require another strain of blood to give the peculiar qualities so much desired in the polo pony. This, then, points to the introduction of a fresh strain. We can never hope to attain what we desire by means of any combination of alien strains. Whatever their virtues, and no doubt they are many, the cart horse, the coach horse, and the hackney, are excluded, not from any defect in themselves, but rather on account of their excellencies, so that we reject them for the very points which their admirers look for. Alien blood, even in the remotest degree, being excluded, what we want is a kindred strain, modified, renovated, and established by long residence, under different circumstances, on other soil.

And this brings me to the pony blood which we all consider desirable, because it results in just that modification of the thoroughbred make and shape which tends to give the well-balanced animals we want. Our ponies, by virtue of their Eastern origin and here and there surviving strains of pure blood, are kindred to the thoroughbred, and have been modified by the powerful influences of an open-air life, a struggle for existence, and uncultivated and unstained pastures to live on. When polo ponies were selected by chance, everything favoured the introduction into the game of those with

pony blood in their veins. Other influences decreed that a large number of the best ponies should be mares. I do not know that this has ever been suggested, but one of the results of a fixed standard of measurement is, that as mares are easier to measure than horses, our system of measurement has tended to bring into the game a considerable proportion of mares. When we see a blood pony measuring 14·1 or 14·2, and having the unmistakable character of the pony about it, we infer, though we cannot prove, the existence of a pony ancestor in its pedigree. We may go a step further, and say that we are more likely to breed a first-rate pony if in its pedigree a generation or two back we find a small sire or dam the height of which suggests, even though it may not actually prove, pony ancestry. Anyone who will take the trouble to trace the pedigrees of polo-bred ponies will find almost invariably that the most successful have a small pony in their pedigree.

There is, however, another reason why pony blood is extremely useful to the breeder. It you are breeding from two thoroughbred dwarfs, you may, and indeed must, take steps to prevent them from growing too big. At some time or other the growth must be checked by exposure, inferior food, or the like. But if you have pony blood not too remote, it is then possible to feed the young stock highly ; and from this we cannot get away, that good feeding means make and shape. If anyone doubts this, he has only to compare a New Forest pony taken off the forest as a sucker and carefully looked after, with its own brother or sister left out during the early years of its life to shift for itself. With practice and close observation we learn to see the possibilities of mountain and moorland ponies in their native haunts. But we must bear in mind that they are possibilities only, and undeveloped.

What we want, however, in breeding a polo pony, is to obtain the best-shaped, best-nourished, best-looking animal we can, and the less we are hampered by fears of our ponies growing over height, the more we shall be able to feed them and the more successful we shall be. Of course, it might be objected that if—which is conceivable—we had no height limit at all, all our pains would be labour lost. However, this is not so. If the Hurlingham system were done away to-morrow, it would not make an average difference of an inch in the ponies playing. Indeed, I should not be surprised if, in the course of a few years, the average height of ponies would, if there was no measurement, be rather less than it is at present. I suspect that we have thought too much about height, and perhaps not enough of those other qualities noted above.

There is another point of view from which to regard polo-pony

breeding. English and Irish ponies are the best, but it is exceedingly difficult to make a profit out of breeding ponies, or even to make the incomings and outgoings of a pony stud balance at the end of the year. Hence a very serious question of the future is the supply of polo ponies. The solution, of course, is that more ponies should be bred in England and Ireland. And I wish that those who play polo could be brought to see the importance of helping forward pony-breeding.—T. F. DALE in *Live Stock Journal Almanac.*

Deep-Rooting Plants and Alternate Husbandry.—When Mr. R. H. Elliot, of Clifton Park, Kelso, upwards of 20 years ago, began to apply in farm practice in Scotland the lessons of his Indian experiences in pulverising and enriching the land by means of strong rooting plants, few expected that his system would transform long-established customs. Like most advocates of new methods, Mr. Elliot had heavy obstacles to contend with, but he persevered, and, by force of practical example, succeeded where precept was unavailing. His own upland farm in Roxburghshire has reflected the merits of the particular form of alternate husbandry which he advised, and the example set at Clifton Park has been emulated with success in many other counties in Scotland and England. Among the first to perceive economic advantages in Mr. Elliot's system was Mr. James Hunter, of Chester, who from an early stage in the experiments has kept in close touch with the work at Clifton Park. Probably no one, apart from Mr. Elliot himself, has a more intimate knowledge of the underlying principle and details of the system than Mr. Hunter, and in an address recently to the Agricultural Society of the University of Wales, Aberystwith, he gave a concise account of its distinguishing characteristics and the results it has achieved locally and throughout Great Britain. The system has spread widely, and as long ago as in 1905 Mr. Hunter was able to trace evidences of its adoption in ninety-three counties in Great Britain and Ireland.

The Clifton Park system is adaptable to the laying down of land to permanent grass, but its economic advantages are seen to better advantage in what is known as alternate husbandry—that is, an extended rotation, including four, five, or more years under grass. The long rotation is more common in Scotland than in England, though it is not usual for the land to lie four years in grass, two, and at the most three, years being the usual practice. Since arable farming became less profitable there has been a tendency to widen the rotation chiefly with the view of reducing the labour bill. The modification was easy where it had been the custom to cultivate

temporary pastures, as it meant only the inclusion in the seeds mixtures of a few varieties of grasses capable of lasting a year or two longer. During the protracted struggle with adverse corn markets in the eighties the adoption of the northern practice of temporary pastures was tried in England. The late Lord Leicester, on his estate of Holkham, that nursery of pioneer movements in farming, strove eagerly to demonstrate its economic merits, and many in the Eastern counties and elsewhere, where the soil was similar, found the system helpful in tiding over the difficulties which then confronted them. On the stronger soils in Essex and Herts attempts to follow Lord Leicester's example were unsuccessful, because of the refractory nature of the land, which only in the most favourable seasons can be reduced to a tilth fine enough to ensure the germination of the small seeds and the establishment of a regular plant.

Although there are limits to the extension of temporary pastures it is not disputed that there are large stretches of poor permanent grass on intermediate soils that might be converted into arable on the long rotation system and thereby made more productive. Soils of this type might not be profitable to crop on the four years' principle, as they are not suited for wheat nor capable of producing in succession bulky yields of either corn, clover, or roots. Their chief defects are their light texture and insufficient reserves of vegetable matter. These could be repaired in a measure by the old system of temporary pastures, but by means of the Clifton Park method the natural imperfections could be effectively rectified for the production of such crops as thrive on that class of land.

The work done by Mr. Elliot will repay careful study. It has long since passed from the early experimental stage and is ripe for serious consideration in relation to its adoption as an underlying principle in British farming. The system is extremely simple; it consists of doing by means of plants what is ordinarily done with the aid of implements and manures. The grass mixtures used for either permanent or temporary pastures include small quantities of strong rooting plants, such as chicory, burnet, and kidney vetch. The root development of these is so powerful as to penetrate deeply, even into hard sub-soils, with the result that the ground is broken up and the rooting area for less powerful plants extended and spreading made easier. In a mechanical sense the benefit is thus pronounced, the pulverisation of the sub-soil being more thorough and less expensive than if it were attempted by the ordinary process. But the land is enriched as well as loosened by the cultivation of plants with strong rooting qualities. Many soils yield indifferently because of a deficiency of humus or vegetable matter, the supply

of which diminishes with prolonged cultivation of crops that are removed bodily from the land. It is the stores of vegetable matter that constitute the peculiar virtue of virgin soils and, as these are the accumulations of indefinite periods, it is only natural that they should diminish if no means are taken to repair the exhaustion resulting from continuous cropping. The application of farmyard manure, the ploughing down of mustard, clover, and other green crops, and the hurdling of sheep on the roots are all well-known devices for maintaining the reserves.

Mr. Elliot has proved that strong rooting plants are equally effective, but their use has the advantage of supplementing rather than superseding the established practices. They do their work in an unostentatious manner, while supplying a liberal amount of valuable green food for cattle and sheep. The inclusion in the seeds mixtures of the deep rooting plants improves the pastures as well as the land. Their large root development makes them able to resist drought, and thus ensures, as has been shown at Clifton, that rainless seasons have little terror for the stockowner who has laid down his pastures according to Mr. Elliot's prescription.

The eight-year rotation adopted by Mr. Elliot is described by Mr. Hunter as follows:—First year.—After turnips lay down to grass with a thin seeding of oats or barley. Four years grass is then taken, and at the end of the fifth year from the date of sowing down the turf is ploughed and the result provides ample food for the succeeding crops of the rotation. Sixth year.—Turnips taken after the grass and followed by (seventh year) oats, followed by (eighth year) turnips. Then the rotation is repeated as often as wished.

This rotation, however, is capable of modification. The grass may lie longer if the grazing is profitable, and other crops may be substituted for those mentioned as circumstances advise. As proof of the richness of the land after a temporary pasture of the Clifton type it may be mentioned that the potato crops following grass in 1903 and 1904 yielded respectively 13 tons 14cwt. and 12 tons 7 cwt. per acre, no manure whatever being applied, the only nutriment being from the decomposed turf. That the principle enunciated by Mr. Elliot is sound is evident from the practice, dating from time immemorial, of growing clover as a preparation for wheat. The clover plant is, perhaps, the best example of the faculty of the *leguminosæ* for enriching the soil, and, although the deep rooting plants are the primary factors in Mr. Elliot's system, clover is an essential agent in perfecting the process. Clover, burnet, chicory, and kidney vetch co-operate in improving the mechanical condition and fertility of the land, the stronger rooting

plants being as valuable a preparation for clover as the latter is for the crops that follow. The variety of clover used at Clifton Park for the last 20 years is the late flowering red clover, 2lb. or 2½lb. per acre, being the usual quantity included in the mixture. The kidney vetch, which is almost equal to chicory and burnet in opening up the sub-soil, is next in importance to clover as a nitrogen collector, and this justifies its inclusion on two grounds.

The merits of the Clifton Park system have been demonstrated by experiments conducted by the Agricultural Department of Cambridge University in several Eastern counties, in Wales, and in Ireland, and the Board of Agriculture have recognised its importance by making provision for a continuance of the work by the tenant of the farm which Mr. Elliot, owing to his advanced age, has been obliged to relinquish. Mr. R. H. Elliot, the originator of this ingenious system of economic husbandry, which promises to be instrumental in restoring to cultivation much of the poor permanent grass land, has published a book which has run into several editions describing in detail his work from the beginning, and now that there are prospects of greater prosperity for arable farming to read its pages seems especially opportune.—*The Times.*

Manures: Winter *versus* **Spring Application.**—There is little doubt that under certain conditions of soil and climate the practice of carefully storing the farm-yard manure during winter and applying it in the drills in spring is the most efficacious and economical one, and this view receives much support from a consideration of the results of a rotation experiment conducted by Professor Wright at the Experiment Station, Kilmarnock, from 1902 to 1906.

Two of the main objects of this experiment were to show the effects of the different methods of using fresh dung, namely—(1) to apply it broadcast in the autumn and (*a*) plough it in at once, (*b*) leave it spread on the surface some months before ploughing in; and (2) to apply it in drills at seeding time in spring, and to observe the influence of each method on the succeeding crops in the rotation. A further object was to compare the effects of fresh manure with the same quantity of fresh manure after rotting (*a*) in a heap in the field, and (*b*) in a heap under cover. Two different four-course rotations were tested, namely—(1) potatoes, wheat, seeds, oats, and (2) turnips, barley, seeds, oats; and this part of the experiment involved the careful weighing of the produce of six duplicated plots for four successive years. The winter dressing was put on about the middle of January and either ploughed in at once or left for two months on the surface and then ploughed in. The soil is a light

loam, and the spring months the first year of the experiment were exceptionally dry, so that little loss would be incurred through washing on the winter manured plots. In both rotations the most striking result was the marked superiority over all the others of the plot which received twenty tons of fresh manure in the drills. In the potato rotation, this plot gave a profit per acre per annum of £2 13s. 2d., compared with £1 1s. 2d. obtained from the plot on which twenty tons of fresh manure were ploughed in in winter, and £1 16s. 8d. from the plot receiving the residue of twenty tons of fresh manure after rotting in the field. The high profit from the plot manured in spring with fresh manure was largely due to the potato crop, but the other crops also contributed their share. It appears from these results that it is more economical to store the manure during winter and apply it in spring than to top-dress in winter and plough it in. But when we turn to the turnip rotation we find that the very opposite is the case. Here the plot which received twenty tons of fresh manure in winter ploughed in at once gave an increase of 5s. 11d. per acre per annum over the plot receiving in the drills the residue from twenty tons of fresh manure rotted in the field. On analysing the results, it is interesting to notice that with turnips the increase of the spring-manured plot over the unmanured plot was 5·8 tons per acre, and of the winter manured plot only 3·8 tons per acre; whereas with oats, the last crop in the rotation, the respective figures are a decrease of 101 lbs. and an increase of 105 lbs. of grain per acre—showing clearly how misleading the conclusions from a single year's experiment may be. The results from the various methods of treatment may be summarised thus :—

Treatment.	Profit per acre per annum. Potato Rotation.		
20 tons dung applied in winter and ploughed in at once ..	£1	1	2
20 tons dung applied in winter, but not ploughed in for two months	0	15	10
20 tons fresh dung applied in the drills in spring	2	13	2
Residue from 20 tons fresh dung applied in drills after rotting in the field	1	16	8
Residue from 20 tons fresh dung applied in drills after rotting under cover	2	3	8

It should be noted that these results do not prove that a certain weight of fresh manure gives better results than an equal weight of rotted manure, but they do show that twenty tons of fresh manure in the drills form a superior dressing to the residue from the same quantity of fresh manure after rotting under even the most favourable conditions. The actual weight of the residue from the fresh

manure amounted to 16·6 tons when rotted under cover, aud 16 tons when rotted in the open; so that by storing the manure till the spring between three and four tons per acre of valuable organic matter was lost, besides the loss of nitrogen which would be incurred. But only a portion of the total manure produced is available for application in the fresh condition in the spring, and the real issue very often is not between fresh manure in spring and fresh manure in winter, but between fresh manure in spring and rotted manure in autumn (that is, when stored during the summer); or between fresh manure in winter and rotted manure in spring (that is, when stored during winter). The above results show that for potatoes it pays to store the manure during winter and apply it in the drills, while for turnips it is more economical in the long run to apply it broadcast in the winter and plough it in.

On the other hand, it may well be urged by the practical farmer that neither in this experiment nor in any others of a similar kind has any attempt been made to assess the monetary advantage of having the manure applied during the winter, and thus allowing spring work to go forward more rapidly. There is no doubt whatever that in wet, backward seasons this would amount to a very considerable figure. Nor has any sum been allowed for the other advantages of winter manuring above mentioned. So that the apparent economy and efficacy of spring manuring in the experiment described are not so real as the figures given would lead one at first sight to believe. In any case, the results of a single experiment cannot be considered conclusive even for similar soils, and they are certainly not applicable to different soils and climates.

Artificial Manures in Winter and Spring.

Coming now to the winter *versus* spring application of artificial manures, we shall find that the case is much simpler. It is not complicated by such questions as losses during storage, effects on the physical properties of the soil, etc., and many carefully-conducted field experiments have made it tolerably certain which is the best season to apply the various artificials to the various crops. The only artificial which is now extensively employed as a winter top-dressing is basic slag, and it is applied chiefly to grass lands, either permanent pasture or land intended for hay. The phosphate of lime in the slag is in a more slowly soluble form than that in superphosphate, and it should be applied not later than January, and preferably in October or November, in order that its good effects may be apparent in the following season.

As a top-dressing for poor permanent pastures, especially if the soil is deficient in lime, slag is almost invaluable. It gives its best results upon stiff clays and upon peaty soils, and in the latter case it will usually be profitable to sow a few cwts. of kainit along with it, a common dressing being 10 cwt. slag and 6 cwt. kainit per acre applied in the early winter. Slag has a wonderful effect in promoting the growth of the finer grasses and the clovers, especially white clover, and these latter enrich the soil because of the nitrogen which they are able to fix in their root nodules.

The remarkable effects of slag as an improver of poor pastures has been well illustrated in an experiment conducted by Professor Wright at the Scottish Labour Colony, near Dumfries, on poor, reclaimed moss land. On one plot 10 cwt. slag per acre were applied, and on another 10 cwt. slag and 8 cwt. kainit. Sheep were grazed on them and on an unmanured plot for twenty weeks during each of six successive summers, and weighed every month. The slag plot gave a profit over the unmanured of 7s. 3d. per acre per annum, while the slag and kainit plot gave a *profit of* 14*s. per acre per annum.* Other experiments, notably those on poor clay soils, and on light peaty soils, show that on such soils slag alone at the rate of 10 cwt. per acre gives the highest profit. The special feature of slag manuring is that its good effects extend over at least five or six years.

As soon as the efficacy of slag as a manure for pastures became known, it was tried upon root crops, and at first it was thought that it should be applied in the winter for this purpose also; but many experiments have conclusively proved that under most circumstances it will give its best results on root crops when applied in the drills in spring. Thus, in experiments with turnips conduced by Professor Wright on twenty-two farms in the centre and south-west of Scotland, the spring-applied slag gave an average over 16 farms of about 2½ tons roots per acre more than the winter-applied, the remaining six farms showing an average increase in favour of the winter dressing of 2 tons 12 cwt. per acre. The reason for this result has already been mentioned in connection with farmyard manure. Owing to the method of cultivation commonly practised only a part of the winter-sown slag can ever come within reach of the plant roots, and it appears that the advantage through having all the manure concentrated in the drills is more than sufficient to make good any loss on account of decreased availability.

With cereals, however, as with grasses, in which the whole of the soil is occupied by plant roots, winter application of slag is usually preferable.

The only other artificial manure which is now recommended for winter use on certain crops is kainit. This manure contains about 12 per cent. potash, but along with it is associated about 35 per cent. common salt and 30 per cent. magnesium salts. If applied in spring to grasses, and especially to clovers, the salt and magnesia are found to have deleterious effects, and for these crops kainit should be applied in winter, so that the injurious stuffs may be washed out before spring growth begins. For potatoes also kainit should always be put on in winter, otherwise very poor cooking quality will result, but in this case other potash manures are generally more profitable.

On the other hand, kainit should be applied in spring to such crops as mangels, cereals, cabbages, etc., on which the common salt and magnesia appear to have a beneficial rather than an injurious action. Mangels are essentially a salt-loving crop and will respond well to dressings of salt, either as kainit or as " agricultural salt," while in the case of oats salt is said to have a strengthening effect upon the straw, thus reducing the risk of damage from " lodging " before harvest.

As regards the other artificial manures, it is unnecessary to deal with each one separately. Speaking generally, all those containing readily-soluble forms of nitrogen, potash, and phosphates—*e.g.*, nitrate of soda, superphosphates of lime, sulphate of potash, etc.—should be applied in spring or early summer, while slower-acting manures—*e.g.*, mineral phosphates, bone meal, bone flour, etc.—should be applied according to the principles outlined above, viz., in the spring for root crops, and in winter for grasses and cereals. —*The Scottish Farmer.*

Milk Records.—In a lecture recently given by Mr. F. J. Richards, in Bucks, the author said :—It has been for many years a matter of surprise to the foreign buyer—who has been in the habit of coming to England for sires with which to improve the farm stock of his own country—that we, who can produce such splendid types of beef bulls, stallions, rams and boars, have nothing to show him in the way of pedigree milk bulls. In a few cases foreigners not knowing the circumstances have bought famous bulls at high prices and have been disgusted to find that they were beef and not milk producers.

We have been content for generations to do practically all our judging of farm stock by appearance only, and the results have been extremely satisfactory in all cases, except in that of milking animals. Here we undoubtedly do not lead, and one of the chief

reasons of our failure in this respect is our slowness to adopt a more rational method of judging and selection, viz., that of judging according to individual performance, of judging milking cows according to the yield and quality of their milk.

Experiments with actual yields of cows have proved that the method of judging by appearance only is insufficient, and even misleading. The late Mr. John Speir, in an excellent lecture on "Milk Records," mentioned the case of the unpedigreed Shorthorn cow, Daisy No. 37, at the Dairy Show of 1907. This cow, he said, had quite a good back and body, but her udder was not quite up to showyard ideas. In the inspection class she was placed third, but in the milking trials first. She was seven years old and she had calved in August, and six weeks afterwards she gave, roughly speaking, six gallons of milk in twenty-four hours. This milk contained 5·84 per cent. of butter fat in the morning yield, and 6·9 per cent. of butter fat in the evening yield, and from it was produced a trifle over 4 lbs. of butter. This might serve as an example to prove it is possible to have a cow yielding both a large quantity and a high quality of milk. Thus it is not enough to judge by appearance only, when selecting animals for breeding for milk production, but it is essential to take into account the milking pedigree.

One need hardly discuss the principle of heredity, as farmers have for generations bred animals on the principle that like begets like, and that indiscriminate crossing tends to produce reversion to an inferior type. All work done in the direction of milk records tends to show that there is no characteristic in dairy cattle more strongly hereditary than the ability to produce milk. But in what manner do we apply these principles? A very large number of dairy farmers sell off their calves either for slaughter or to be reared by other men; in any case the pedigree is lost, and the calf, if allowed to live, is valued by appearance alone. Even those who carefully select and rear calves from their best milkers are considerably handicapped in the matter of data. For unless the farmer is constantly present at each milking he has to rely on the opinion of his milkers. Even where these milkers are intelligent men, capable of making comparisons, it usually happens that one man habitually milks one batch of cows, another man another batch, so that exact comparisons are very difficult to make; moreover, differences of say one quart a day would probably escape the eye of the farmer even if he were constantly in attendance, yet one quart a day can amount to 70 gallons per annum, assuming a lactation period of 280 days, and 70 gallons at 8d. amount to £2 6s. 8d. Besides this, many other important details are lost, such as the period

of lactation, for although one cow may yield more daily than another, yet the period of lactation may be shorter in the former case so that the deficiency may be made up in another way and the total yields per annum of each cow may be equal. The previous record, too, is lost, and it would be difficult to say what the cows had done in previous years.

The greatest difficulty, however, is experienced in the choice of a bull. The majority of our bulls have been chosen either because they have won prizes at our stock shows or on account of their descent from sires made valuable through winning such prizes. The judging has all been done on appearance, and besides that the dams of some of our best show stock have not been forced for milking purposes; all they have to do is to rear their calves, and the milking quality is neglected. The result is that for beef production our bulls are probably the best in the world; but for ability to get heavy milkers we cannot recommend them. Yet few people will deny that the bull has a tremendous influence on the milk yielding qualities of its progeny, as an old saying has it: "A good bull is half the herd."

To prove this we may refer to the Newton Rigg Herd at Penrith, where two pedigree bulls were used. One of them was named Crown Prince Hanson, a good beef bull, but a failure from a milk point of view; he was afterwards sold to go to the Argentine Republic. The other, Major Moss, was known to be of a good milking cow. Now in the case of the first bull, although the heifers got by him were very good-looking animals they were absolute failures as milkers, whereas the progeny of the second bull turned out excellent milkers. I have here the particulars of the yield of the offspring, showing that where certain cows were mated to Crown Prince Hanson and four heifers were produced, two were utter failures and the other two were indifferent milkers. Yet the same cows mated later on to Major Moss produced, in each case, excellent milkers, their yields in the first year being 674 gallons, 556 gallons 828 gallons, and 913 gallons respectively, while the first gave in her fourth year of milking 1,033 gallons in forty weeks. There can be no doubt that many of the bad milkers now in the country are the results of mating the cows of small holders with bulls that happened to be conveniently near to them in their district, without regard to pedigree or quality of any kind.

Now comes the question of remedy. As the best test of a race-horse is his ability to win a classic race, so the best test of a milking cow is its ability to yield a record amount of milk of good quality. The only way by which we can ascertain the milking quality of a

cow is that of keeping an accurate record of the milk she produces. This is not expensive; it is not difficult, nor even laborious. The milk of each cow before being emptied from the pail is weighed, the weight of the pail deducted, and the amount entered on a slate or sheet opposite the name of the cow. A spring balance is the most convenient apparatus for weighing, and balances can be bought in which allowance has been made for pails of a certain weight, so that there is no deduction to make. Such a balance can be purchased for 17s. 6d.

The milk should be weighed morning and evening, and the total for the day of each cow permanently recorded. In this manner an accurate account is kept of the milk yield of the whole herd, and at the end of the season comparisons can be made of the merits of each individual. By gradually eliminating the cows of low quality the average for the whole herd will tend to increase. Besides this, discrepancies are brought up so much more vividly when shown on a record than they might be by hearsay.

It is not necessary to weigh the milk daily. It will do quite well to weigh it for one day a week, morning and evening. Of course there are advantages in a daily record: (1) The record is more accurate; (2) It is less likely to be neglected; (3) If a farmer is away during the day he can sometimes detect an ailing cow by the fall in its milk yield. Now, when a man has the milk record of his herd before him he has the best possible guide as to which of his calves to keep and which to exclude from the herd, whether they be male or female.

If a farmer keeps his records regularly and weeds out his poor milkers so as to establish a herd of heavy milking qualities with, say, an average yield of 800 gallons per annum—and this has been done in many cases—then he can sell both his male and female stock according to a milk pedigree, thus establishing a pedigree herd without the cost of exhibiting.

If this method become general and men bought always according to record pedigrees then the average yield for the whole country should increase very considerably. This has been the case in Denmark, where records for the majority of cows are kept in this manner, and in Holland, where in the Province of Friesland alone records are regularly kept of the milk yields of no less than 50,000 cows, and the average yield per cow is estimated at from 850 to 890 gallons of milk per annum. The report of the Ayrshire Milk Records Committee for 1909, shows that records were kept of 9,202 cows, and the report says that, "both home and foreign purchasers place considerable reliance on the records." In America, too, there is

great demand for 1,000 gallon bulls, or, as they say, "10,000 lb. bulls."

The difficulty which here suggests itself is that of establishing the authenticity of the records. To overcome this, control societies have been formed which employ an inspector to visit regularly a certain number of farms to check the records and to make tests of the butter-fat percentage in each cow's milk.

In this county the County Council voted a sum of money for the establishment of a model control society to give farmers an idea of the working of such a body. Twelve farms were visited once a fortnight, the recorder arriving in the afternoon in time for milking. The afternoon milk of each cow was weighed, samples of about one ounce taken in each case and corked away in small bottles until the morning, the recorder usually stayed at the farm overnight, and the weighing was repeated at the morning milking, when another sample of each cow's milk was added to the corresponding sample of the previous evening. The samples of each cow were analysed, and the butterfat percentage entered on a sheet with the morning and evening yield of each cow; 228 cows were tested in this way on farms between Fenny Stratford and Slough.

The period of testing commenced on May 1, and ended on July 21. The time was too short for statistics, and the season of 1911 was, as everyone knows, none too favourable. This may partly account for the fact that the milk yields were not what they should be. In forty-eight cases where samples were taken direct from the cow the milk showed less than 3 per cent. of butter-fat.

In the case of the twelve farmers visited during the summer it is interesting to note that eleven continue to keep the milk records regularly.—From *Mark Lane Express.*

Our Weights and Measures.—The farmers of this country have recently felt compelled to protest against the hopeless state of confusion entailed by our varied weights and measures. A committee of the Chambers of Agriculture has issued a preliminary report, while the Farmers' Club recently discussed the same subject. It is not merely farmers who suffer. Those who are hardest hit are the poorer classes. So long as our pound is divided into 16 ounces and our 1s. into 12 pence so long must those who purchase mainly in small quantities lose a little on nearly every transaction. It may not make much difference to the rich man if he buys meat at 1s. a pound and pays 1d. an ounce for the odd ounces. It makes a great difference to the poorer man, who has to put up with this loss once or twice every week of his life. Hence all classes of the

community would benefit by and welcome a satisfactory improvement of our present heterogeneous system.

The great question is: What improvement would it be well and feasible to adopt?

Any new system which might be proposed should conform to certain essential conditions. These are :—

(1).—It should not discard the problem of international trade.

(2).—It should simplify calculations so far as possible, and not be difficult to grasp by even the poorest of the community.

(3).—Its introduction should be attended with the least possible cost and trouble, both to the nation and to individuals.

Of the many suggestions which have been made we may first consider that of introducing into England the metric system. This would involve the introduction of new standards of money, length, weight, and volume, and every one of our present weights and measures would become useless. A completely new nomenclature would be necessary. An enormous amount of unessential work would be involved in the redrawing of maps and plans and the remarking of railway tracks, etc. Take one single example, the redrawing of the present 1 inch to the mile Ordnance maps. Would the cost be justifiable, or would any commensurate practical advantage accrue? Surely the answer must be in the negative. Hence the introduction of the metric system, while satisfying our first essential condition, would be utterly opposed to the second and third.

Decimal System Need not be Metric.

When the metric standards were introduced abroad the decimal system of division and multiplication of those standards was also adopted, and it is the facility of calculation inherent to the decimal system which has probably been the greatest attraction of the metric system.

But the decimal system of multiplication and division can be applied to any standard, so that it is not necessary to alter our English standards merely to adopt the decimal system. It may be necessary or desirable for other reasons, but the decimal system might be introduced to-morrow if people so wished, and we might weigh or speak of the weight of any substance in tens, hundreds, and thousands of pounds, instead of in our present cumbrous method of pounds, quarters, hundredweights, and tons. Surely it is simpler and better to say 5,000 lbs. than 2 tons 4 cwt. 2 qr. 16 lbs.

The measurement of weight in multiples of ten could thus easily be introduced by doing away with our present quarters and so-called

hundredweights (which do not represent a hundred of any weight we possess) and by introducing a new stone of 10 lbs. and a true hundredweight of 100 lbs.

The ton, or 20 cwt. (new) would then weigh only 2,000 lbs. Now this is 204·6 lbs. less than the metric 1,000 kilograms. By raising our pound by a little over 1-10th we should make our pound the same as the half-kilogram and our ton exactly the same as the Continental 1,000 kilograms, so that international commerce would greatly benefit. Moreover, we should thus introduce the decimal system of calculation. Many of our weights would need but slight alteration to bring them to the new standard—thus the 112 lbs. would be reduced by about 2 lbs., the 56 lbs. by about 1 lb., and the 28 lbs. by nearly ½ lb., and then represent 100, 50, and 25 revised pound respectively. New 1, 2, 3, 5 and 10 lb. weights would be required.

The next change necessary would be in our measures of volume. Our present gallon is a measure holding exactly 10 lbs. of water. If we increase the weight of our pound it would be necessary to equally increase the volume of the gallon so as to represent ten of the revised pounds. The pint should at the same time be made 1-10th of the gallon, and thus hold a volume of water equal to one revised pound in weight. There would thus be a direct relation between volume and weight for all liquids. That relation already exists for those who are accustomed to measure in gallons. But our standard weights and our measures of volume do not at present in any way correspond; thus our weights are 7, 14, 28, 56, 112 lbs., our measures of volume 9, 18, 36, 54, 108 gallons. The sooner we can do away with these senseless multiples and work on a decimal system of 10, 25, 50, 100, etc., the better it will be for everyone.

Advantages of the Duodecimal System.

While the decimal system is admirable for multiplication it is not so advantageous for division. Here the duodecimal system undoubtedly has the advantage, especially when dealing with the small amounts which make up the bulk of the transactions of every-day life. Thus if the pound weight were divided into 10 ounces one could obtain ½ or 1-5th or multiples of 1-10th, but if it were divided into 12 ounces one could obtain ½, 1-3rd, ¼, 1-6th, or multiples of 1-12th. This probably was the reason why our shilling was divided into 12 pence and our foot rule into 12 inches. There seems no good reason for altering these divisions of the shilling and foot, hence it would seem best to divide both the revised pound and the

revised pint into 12 ounces. There would then be a direct relation between ounces by weight and ounces by volume and the pence division of the shilling.

Not only is there no valid reason for altering the present division of the shilling into 12 pence, but there are some cogent reasons against it in the eyes of the public. It would make everything dearer. This may not at first seem a necessary consequence. But assume that instead of 12 we obtained only ten pence for a shilling. The shilling would then purchase only ten penny or 20 half-penny stamps, whereas to-day it purchases 12 penny or 24 halfpenny stamps. It would be similar with everything, the purchasing power of the shilling would have been reduced by one-sixth.

Any attempt to revise our weights and measures which entailed this diminution in the purchasing power of the shilling is certainly foredoomed to failure. Hence the only rational division of the pound and pint likely to be acceptable to the general public is into 12 parts or ounces.

When, however, we consider the sub-division of the ounce for the measurement of minute weights or volumes a decimal system would appear to have greater value than an extension of the duodecimal system. If the ounce were divided into 10, 100, 1,000 parts this would serve all scientific purposes. The ounce would thus become the standard for small weights and volumes, just as the pound, pint, or gallon became the standard for large weights and volumes. Where necessary it would still be possible for those dealing in pounds to reckon these portions on the decimal system rather than in ounces. This practice is even now in vogue; it is, for example, adopted by the British Dairy Farmers' Association when weighing the milk yielded by the cows at the Dairy Show, owing to the facility with which calculations based on weights in pounds and decimals (*i.e.*, tenths) of a pound can be carried out. Gaugers to-day calculate in gallons and in decimal parts thereof, and engineers in inches and 10ths, 100ths, and 1,000ths of an inch.

Other revisions would soon follow or might be introduced simultaneously. Thus our dry measures should be made illegal, and such substances as are now sold under it be sold by weight. If it were found desirable to retain a "bushel," this, instead of being as at present a measure holding 80 lbs. of water, should be one holding 100 revised pounds of water.

Theoretically it may be objected that this system puts up two standards instead of one for both weights and volumes. That is true; but it is a very small drawback, if any, whereas its advantages are great and obvious. It gives us all the advantages of the decimal

system for calculations, and of the duodecimal system for the ordinary transactions of daily life. It does not interfere with our coinage or our foot rule ; it puts our system into direct unity with the metric system so far as international commerce is concerned, and it would avoid the introduction of a single new word into our nomenclature of weights and measures.—A Correspondent in *The Times.*

Middle White Pigs.—All the breeds of pigs at present known to us in Britain have as a common ancestor the wild pig, which was running at large in the dense forests at one time covering this country. It was a favourite object of sport centuries ago, and it is still found in good numbers and hunted in many of the forests of Europe.

Until the middle of the eighteenth century nothing seems to have been done in the way of improving the stock of the country. About that time importations of Chinese and Neapolitan pigs were made, and these were crossed with the native pigs. According to all the old writers on the subject, it is mainly to this introduction of foreign blood that we are indebted for our success in establishing the various excellent breeds of pigs which we now possess. The Chinese proved particularly valuable in effecting the improvement. It is short and wide in the head, with small erect ears, broad back and short legs, and is remarkable for its fecundity and its power of rapid growth. The skin is dark, with very little hair. The Neapolitan is longer in the face, with ears pointing forward, and is entirely black. It also is easily fattened, but is neither so prolific nor has it such a strong constitution as the Chinese. It is believed that the Neapolitan is responsible for the improvement among the black races of pigs, while the white breeds have been derived from the cross with the Chinese.

But the introduction of this foreign blood was only the commencement of the improvers' work. Progress was slow, and it has taken many years of most careful selection to bring the different breeds to their present high state of perfection. Some of the gaunt, long-snouted, coarse-headed, lanky-legged pigs one sees sometimes about in the country even to-day, notwithstanding all the work of improvement effected during the last century, take up room which should be occupied by better specimens. If our farmers and pig-keepers realised the amount and cost of the extra food required to fatten their nondescripts, they would make a rapid clearance and get fresh stocks. The objection sometimes urged is that well-bred pigs cost more to buy than mongrels. In these days of milk records, the up-to-date dairy farmer is prepared to pay a higher price for a bull out of a cow known to yield 900–1,000

gallons than for one whose dam's performance at the pail must be conjectured, and at best will be about 600 gallons in the season. He is paying for something of commercial value as much in the one case as the other. The pig-keeper with good quality stock saves money in food, and sends a better finished article to market.

Sir John Sebright—a man to whom agriculturists owe much—said: "A breed of animals may be said to improve when any desired quality has been increased by art beyond what that quality was in a state of Nature. What has been produced by art must be maintained by art, for the most improved breeds will soon return to a state of Nature; or perhaps defects will arise which did not exist when the breed was in its natural state, unless the greatest care is paid to the selection of individuals who are to breed together." The present writer knows of cases where, within the space of two generations, first-class stocks have been almost ruined through carelessness, not only in mating, but in general management. According to Sidney, a writer of the middle of last century, it is mainly to the efforts of two breeders that we are indebted for the present improved White breeds, in which are included the Large and Middle Yorkshires, the Cheshires, and the Lincolnshires—one Joseph Tuley, a weaver of Keighley, in Yorkshire; the other Mr. Wainman, a landowner of Carhead, Yorkshire.

At the Windsor show of the Royal Agricultural Society, held in 1851, Tuley exhibited a wonderful pig which created a considerable stir in the agricultural world, and his "Matchless" strain, of which this pig was a representative, became the foundation stock of the present day Large White breed. Mr. Wainman, who purchased largely from Tuley's stock, paying very high prices, became the leading breeder and exhibitor of pigs in England. It is stated that the produce of one sow of his herd realised sums amounting to £1,000, one of the litters alone realising £116. Pigs from this herd were sent to all parts of the world, and found their way into several of the Royal herds. Mr. Wainman demonstrated the possibility of rearing pigs to weigh 30–35 stone, and be fit to make into bacon within twelve months of birth.

A year later, viz., in 1852, Tuley exhibited some remarkably fine animals in the large breeds class at Keighley Show. Some of these pigs were considered to be undersized for the class, and there arose a disagreement between the judges. The quality was so high that it was thought disqualification was out of the question, and the committee was called to consider the matter. An arrangement was come to eventually to establish a Middle breed, the judges declaring that it would be ridiculous to class them with the

small breeds. This was the first step in the establishment of a distinct breed. Tuley carefully set to work to fix the type, and aimed for a pig which would occupy among the white breeds the position held by the Berkshires among the black breeds. In this connection it should be remembered that the Berkshire was in those days a larger pig than it is at present. He used some of the best sows of his now famous "Matchless" strain, and crossed them with a first-class boar of the Small White breed. The result of this cross was a lot of excellent pigs, equal in weight to the large breed, and possessing the valuable qualities of the Small White breed in the matter of form, lightness of offal and head, and fineness of bone—distinctly an improvement on the Large White. Mr. Wainman's manager—Fisher—as good a judge of pigs as ever lived, considered these pigs to be deeper and heavier than the finest Berkshires of those days, while at the same time they proved to be quicker feeders, and came earlier to maturity.

With the advent of the Middle breed, the Small White breed became more and more a fancy one, until at the present time there are no classes provided for it at even the principal shows. The late Prince Consort endeavoured to stay the decline of its popularity, but it soon became classed with the pug dog and toy Pomeranian. For many years the Middle Whites carried off the highest awards at the fat stock shows, and at the Chicago Fat Stock Exhibition, in the carcase class, a Middle White pig won the first prize—dressing 90 per cent. of its live weight—a particularly interesting figure in these days when the practice of weighing stock before sending it to market is gaining ground. Later there was an interval during which the Berkshire came very much to the front and became prime favourite, but during the last few years the Middle White has been regaining its former position, and was in the forefront at the Smithfield Shows in 1909 and 1910. Last year, at the Smithfield Club Show in the Agricultural Hall, London, two Middle Whites were awarded the championship for the best pen on exhibition, their weight and age being 7 cwt. 3 qr. 3 lbs. at 11 months 3 weeks. These were bred and exhibited by Mr. Arthur Hiscock, of Motcombe, Shaftesbury.

It may be as well to quote the opinion of some American experts, published in a report to the Convention of Indianapolis, on the question of the qualities of the various breeds of pigs:—They state that "the Middle-bred Yorkshire had attained nearer to perfection than any other breed known to them. These pigs were not generally distributed through Western America, but, when thoroughbred specimens have been introduced, they were held in high esteem. The Middle Whites were especial favourites with

packers (who buy their stock on foot), for the reason that the breed yields larger proportionate net weights than any other hog grown for their use. These pigs are small in bone, but large in flesh of the best quality, evenly and proportionately spread over the whole frame." The members of the Convention had one noteworthy animal of this breed weighed, and found her scale 4½ cwt., and it is reported that while she was in good flesh she was not really fat. She measured 6 feet from the root of the tail to between the ears, and 6 feet round the body. Unfortunately, the age of the animal is not mentioned. A boar of the Rosneath herd, aged two years, which had been used for stud purposes, was measured and weighed by the writer, and found to scale a few pounds over 8 cwt., and measured 6 feet 6 inches in length from root of tail to the nose, and 2 feet 9 inches in height. Some six months old pigs of the same herd weighed 20–21 stones of 14 lbs.

One of the valuable features of the Middle White is the lightness of offal—in other words, the high percentage of carcase to live weight. The bone is small and light, as is also the head, while the body is well and evenly covered all over, the flesh coming well down to the hock. Altogether it makes an ideal butcher's pig. From the farmers' point of view it enjoys some special advantages. It is very hardy and an excellent forager. In fact, sows will keep in good healthy condition for breeding with scarcely any other food than they can find for themselves in a bit of old grass land or grassy wood land, especially under the beech trees. The fatteners make the best use of the food given them, and put on weight as quickly as any breed of pigs we possess. The sows are prolific breeders, averaging 10-13 pigs in a litter, and make the gentlest and most careful of mothers. Being good feeders themselves, they are able to do full justice by their offspring. The disposition of the boars, too, is quiet and tractable, and this is of no small importance. Visitors to the Rosneath herd are surprised to see the way the boars are handled and allowed to run about in the yards. The boars are excellent for crossing with almost any of the breeds, and where it is desirable to raise the quality of the common pigs of the countryside, no better sire can be chosen than a well-bred Middle White boar of good size and substance. It would be well for the country if pig-keepers generally would make up their minds to the desirability—nay, the necessity—of using better boars, of whatever breed, than those usually seen. These latter perform their function in an unsatisfactory manner, and their use is, in fact, wasteful. By the establishment of a better class of pigs in the country, the food bill for a given output of pig

products would be considerably less; in other words, the same quantity of pig foods would produce more pork and bacon.

The standard of excellence of the Middle White breed, is set out in the Herd Book of the National Pig Breeders' Association.—ROBERT AMENT in *Scottish Farmer Album.*

The Lubrication of Machinery.—The lubrication of farm machinery does not, generally speaking, get the consideration which its importance demands. To many farmers oil is oil, and but little thought is given as to whether the oil chosen is suitable for the purpose for which it is used, yet oil varies greatly in quality, grade, and price, and an oil which might be suitable for one purpose might be totally unsuitable for another. On the one hand it would be folly to use an expensive oil where a cheaper quality would be as suitable, and, on the other hand, it would be false economy to use a cheap oil where a better and more expensive lubricant was necessary.

Roughly speaking, oil for farm purposes might be graded as follows:—

(1) Tallow or grease for rough unturned spindles and axles, such as those on ploughs, horse hoes, cultivators and the like, also for farm carts and wagons, binder transport, wheels, etc.

(2) A medium bodied oil, such as that generally known as engine oil, for the heavier class of farm machinery, such as mowers, binders, engine bearings, the bearings of shafting, chaff cutters, and barn machinery.

(3) A thinner oil for quick running light machinery, such as cream separators.

(4) A special oil, capable of resisting high temperatures, for the lubrication of the cylinders of gas and oil engines, and known as gas or oil engine oil.

(5) A special oil for the lubrication of steam engine cylinders, and known as steam cylinder oil.

The proper way to lubricate a plough or similar axle is to take off the wheel, smear the axle with cart grease or tallow (the sort known as Russian tallow, about the consistency of lard, is very good), and then drop on a little oil to help the grease to flow. Axles treated in this way will run a long while without cutting or getting hot, and the method will be found very effective for such things as ploughs, horse hoes, horse rakes, cultivators, drills, farm carts, and the travelling wheels of binders, elevators, and such like. A piece of wood cut to the shape of a narrow butter hand is most useful for applying the grease.

A second-grade oil, known as engine oil, is a very useful lubricant for farm machinery generally. It should be of good quality and free from any tendency to go sticky, or become like gum, as this latter is a most objectionable feature often found in cheap oils of this class. Farming machinery is often used for a short period, and then left standing for a considerable time idle, and if a gummy oil is used it will congeal, or partly solidify, during the time the machine is standing still, destroying its lubricating properties and also preventing any fresh oil which may be put on from properly flowing through the bearing. As a case in point, we have seen a mowing machine which had been freely lubricated with an oil of this nature on which the oil had set almost like glue, making it practically impossible to get the wheels round. When the machine was taken to pieces the oil had to be cut and scraped off the spindles and bearings with a knife.

Cream separators and other fast running light machinery require a much thinner oil, also free from any tendency to gum, and of this class there are many good makes on the market known as cream-separator oils. If a good separator oil cannot be obtained, use good sperm oil. Ordinary oil is quite unsuitable, and will increase the power required to drive the machine considerably, at the same time causing a good deal of wear and tear through inefficient lubrication.

For the lubrication of the cylinders and pistons of gas and oil engines, the special oils known as gas or oil engine oil should be used. Ordinary oils are quite useless, for, owing to the high temperature of the gases in the cylinder at the time of combustion, they become decomposed or burnt up, leaving tarry or sooty deposits behind, which foul the cylinder and valves. Under these conditions they are inefficient as lubricants. The steam engine cylinder differs somewhat from the gas and oil engine, although here again we have a fairly high temperature, and an ordinary oil would become too thin to properly lubricate the cylinder and piston. A good steam cylinder oil should be used. It is a thick semi-fluid oil, usually dark in colour. It does not flow very readily from an oil can, but this can be remedied by placing the can in a warm place for a short time. The crank shaft and other bearings on steam, gas, and oil engines may be lubricated with ordinary engine oil.

In the lubrication of machinery a good maxim to follow is "apply little and often." Do not smother the machine with oil; see that the oil goes where it is required, viz., in the bearings. Clean out the lubricators, if any, frequently, and supply new wicks when those

in use get clogged up and dirty. Clean out the holes with a long pin or other instrument, and see that there is a way for the oil to get down into each bearing.

If there is reason to believe that the oil in a bearing is dirty or gummy, pour in a little paraffin or petrol, and let the machine run for a minute or so; this will dissolve out the dirt and clean the bearing, then lubricate up with the proper oil.

Should a bearing get hot, it is a sure sign that something is wrong. The bearing may be dry owing to the lubricating hole being stopped up, and so preventing the oil getting down, or it may be through the use of an unsuitable oil, or the shaft may be out of line, a bolt may have worked loose, and the bearing shifted slightly out of place. Remedy the defect. Stop for a short time, if possible, to allow the heated bearing to cool down, then lubricate freely until matters again resume their normal state.

There is no doubt whatever that it pays to have every bearing and spindle, of whatever nature, properly lubricated, from the plough axle to those in a cream separator or oil engine; not only does it reduce wear and tear, and consequently running expenses, but it also considerably lightens the draught of the machine.—"ENGINEER," in *Mark Lane Express Almanac.*

Nitrogenous Matter in Foods.—One characteristic difference between higher animals and higher plants is that plants have the power, under certain conditions, of building up food material from simple substances, such as water, carbon dioxide gas, and a few salts, while animals have no such power. They cannot elaborate albuminoids, fats, and carbohydrates from such simple things as the plant does, but must receive their food in this already elaborated form, in order to supply them with the necessary bodily heat and energy. The material manufactured and stored up by plants constitutes the staple food of farm animals, and naturally enough it is round that part of the food. which alone has the power of "flesh-forming," that a considerable amount of interest centres. These "flesh-forming" constituents always contain nitrogen, and are considered to be formed from the nitrates in the soil being taken into the plant and changed into ammonia, then from the ammonia amides are formed, and these are finally more or less converted into albuminoids.

CRUDE ALBUMINOIDS.

In the analysis of foods the nitrogen is converted into ammonia by continued boiling of the food with strong sulphuric acid; the

ammonia is then distilled off after adding an alkali, and, in this way, the amount of nitrogen present in the food is determined. It has been found that the nitrogenous matter of foods contains, on an average, approximately 16 per cent. of nitrogen, so that, by multiplying the nitrogen found in the analysis by 6¼, the amount of nitrogenous matter is determined, and often goes under the term of "crude albuminoids." This term includes all the substances in the plant which contain nitrogen, and may consist of substances of widely different properties. It is usual, however, to divide these "crude albuminoids" into two divisions. Those which are precipitated from solution by copper hydrate are called albuminoids, and those which are not are called amides. Chemical analysis reveals that albuminoids contain sulphur and sometimes phosphorus and iron, in addition to the carbon, hydrogen, oxygen, and nitrogen which constitutes an amide.

Albuminoids or Proteids.

The nitrogenous matter in ripe seeds, and cakes made from these seeds, consists chiefly of albuminoids or proteids. The former is the more usual term in this country. By the consumption and digestion of the albuminoids of the food, the "flesh," hair, horn, wool, etc., are formed. Young animals during growth, and animals passing from lean to fat condition, develop a considerable amount of nitrogenous tissue, and it is mostly from the albuminoid part of the food that this can be formed. On this account they have been designated "flesh-formers." Under some circumstances fat is produced from them, and by the combustion of albuminoids in the animal body heat and mechanical force are developed. Most of the requirements of the animal body can, therefore, be supplied by the albuminoids. The albuminoids undergo no change in composition in the animal body till they arrive in the stomach and come in contact with the gastric juice. This acts on them, and converts them into soluble bodies called peptones, which are capable of being absorbed into the animal system. and of supplying its nitrogenous requirements. The pancreatic juice has also the power of converting albuminoids into peptones, and acts on those which have not been rendered diffusible in the stomach. The albuminoids which leave the body undigested often contain phosphorus. When the albuminoids are used in the animal body for the supply of heat and force, the nitrogen is not burnt or oxidised, as is the case with the carbon and hydrogen, but is excreted in the form of urea. The formation of fat from the albuminoids takes place during their partial combustion. It is, however, wasteful to use albuminoids

for the formation of animal fat, as this can be produced much more economically from fat or carbohydrates, and a suitable proportion of these should always be included in the ration.

AMIDES.

These bodies resemble albuminoids in containing nitrogen, but do not contain sulphur or phosphorus. They are not precipitated from solution by metallic salts like the albuminoids, and are distinguished chemically in this way. By this distinguishing test the proportion of amidic nitrogen in the different foods has been ascertained, and throws light on their origin. Ripe seeds and oil cakes have practically all the nitrogen in the albuminoid form ; the same thing applies, more or less, to ripe straw. Immature produce, in the form of fodder crops, has a considerable proportion of its nitrogen in the amide form, probably 30 per cent. or more, but it is in root crops that the largest proportion is found. In turnips 50 per cent. may be in the amide form, and in mangels even more. Mangels usually contain a notable amount of the non-albuminoid nitrogen in the form of nitrates. The above facts lead to the general statement that, as the plant matures, the amides are gradually converted into albuminoids. They may be regarded as immature albuminoids. Warington shows the gradual conversion of amides in into albuminoids in meadow hay harvested at different stages of maturity. In the first cutting (young grass) the amide nitrogen was 45 per cent. ; in the second (full flower), 16 per cent. ; and in the third cutting (ripe), only 7½ per cent. of the total nitrogen. In the germination of grain, and in the heating of hay in the rick, the reverse order of things takes place, for a part of the albuminoid nitrogen is converted into amides, while in the case of silage the amides may be further reduced to ammonium salts.

RECENT DISCOVERIES.

It has been usual to maintain that amides, when consumed as food, are burnt in the system, the nitrogen leaving the body in the form of urea, but they have no power of building up the nitrogenous tissues of the body. This latter statement is now one which must be qualified, because under certain conditions it is possible for amides to be converted into albuminoids in the animal body. This change is probably produced only in the case of ruminants, where bacterial action plays an important part in the digestive process. These bacteria appropriate the albuminoids of food to their own use ; they also split some of them up into simpler bodies, and attack the

fibre which the digestive juices have little power of dealing with. Various acids and gases (marsh gas, carbon dioxide gas, and hydrogen), are produced as a result of the activity of these bacteria, and, in order to account fully for all the food given to a ruminant, these gases produced must be taken into account. The breaking down of the fibre by these bacteria allows the digestive juices to act on many things they would not have been otherwise able to. The interesting point about some of these bacteria is that they are able to form albuminoids from amidic bodies under certain conditions. It is also thought that the presence of carbohydrates or similar bodies may facilitate this change. This interesting point throws open a wide door for research work. It will doubtless explain in some cases why certain combinations of foods do better than others. Although albuminoids may supply most of the requirements of the animal body, it is better to confine their function largely to the production of nitrogenous tissue, and to develop the heat and force in the animal body from non-albuminoid substances. It may be possible in the future to further economise the albuminoids by arranging the ration so that a larger proportion of the amides are converted into flesh-forming materials by bacterial agencies.— JOHN PORTER in *The Scottish Farmer.*

Ideal British Wheats.— At a meeting of the National Association of British and Irish Millers, at Chester, Mr. A. E. Humphries, of Weybridge, read a paper on the above subject from which we make the following extracts :—

What do I mean by "ideal wheats" ? Those which best satisfy the requirements of the grower, the miller, the baker, and consumer of bread.

The consumer wants bread of nice flavour and appearance. If he studies dietetics he wants it to be highly digestible, and to contain as much nitrogenous matter as possible. The loaves must therefore be well aerated—in other words, must be relatively large and shapely. The baker knows that, to produce such bread, he must use flour which contains a high percentage of nitrogenous matter, capable of maximum distension. Colloquially, he does not use such terms as these ; he simply calls it "strong." He works generally on exceedingly small margins of profit, and therefore wants to make as many loaves from a given quantity of flour as possible, and sometimes when he talks of "strength" he means, or includes, that characteristic also. However, for the sake of clear thinking, let us realise that the capacity for making large, shapely loaves is one thing, the capacity for making a great number from a given

quantity of flour is another. The two may be, and frequently are, combined in the same wheat or flour, but sometimes they are not, and when I speak of "strength" I mean the capacity for making large, shapely loaves. A seller of flour or bread does not in effect say to the consumer, "I know what is best for you, and you must buy it"; the customer in such cases is substantially master of the situation and gets what he wants. It follows, therefore, that the miller has to provide what the baker or the public wants, and the answer to my question as to the definition of the term "ideal wheats" can be narrowed down to mean those which best suit the requirements of the grower and the miller. That in turn resolves itself into a question of price. In the last thirty years the standard of strength has gone up, whereas the strength of English wheat has gone down. As a consequence, when English wheat is in plentiful supply, the price it realises is relatively low. Let us regard this as a practical proposition. A miller in our great wheat growing counties buys English wheat at a low price; does he thereby secure a greater profit than his competitor at the ports who is paying higher prices for strong foreign wheat? Not at all. Very large quantities of flour made from average English wheat only are sent to London and other great towns. A large proportion of it is used for making puddings or biscuits, for which it is very suitable, but that demand is soon satisfied, and when the supply of such flour is normal or large then it can be sold only at low prices. Unfortunately, the quantity of wheat grown in England has declined, while the population has increased enormously. Yet the flour made exclusively from English wheat is usually a drug on the market; what will it be if you increase the output of such poor stuff? Change its character; grow wheat equal to the best foreign; something superior to the average foreign; and you would work a revolution in the prospects of inland milling and British wheat growing. Simultaneously you improve the food value of the consumer's bread. Can this be done?

As agricultural authorities would not move on their own initiative we set out to discover whether a combination of high quality and great yield could be brought about in the production of English wheats. We were told the two things were incompatible; that the vagaries of our climate would prevent it, and that our soils were not virgin. In any case, we deemed it desirable to make detailed investigations, and I will summarise the results we have obtained.

As our work has proceeded the possibilities of success have enlarged. The knowledge we have obtained of the conditions affecting or governing quality is valuable, and is being applied in many other parts of the world. For present purposes the point

is that under average English weather conditions we can produce in this country wheats of really great strength. We have produced such wheats without a diminution of yield of grain, and without a sacrifice of quality and quantity as regards straw, so we have believed that such favourable results can be obtained under normal conditions in the great wheat growing districts of Great Britain. We now go further than that, and basing our opinion upon results obtained on a small scale, believe that we can in several directions improve the wheat plant, so as to bring about indirectly, as well as directly, an improvement in the quality of the straw, and in the yield of both grain and straw, while maintaining a much improved and therefore a very high standard of quality.

At the outset we wanted to know whether environment, that is to say, the influence of soil, water supply, and climate would predominate, or whether the hereditary influence of breed would do so. We therefore found farmers willing to grow simultaneously, under similar conditions, two well-known varieties of wheat, Square Head's Master and Red Lammas. The committee supplied the seed of each kind from one bulk, and in that way tested the effect of seven different soils on the two varieties. We found that environment did most materially affect quality, and it was interesting to note that the Square Head's Master showed greater differences both as to yield and quality than the Lammas—in other words, that the variation in soil did not bring about uniform differences in quality, but we found that, soil for soil, the better wheat, Lammas, did, in fact, yield the better quality in greater or lesser degree. We realised, therefore, at the end of our first season's work the immense importance of the hereditary influence of breed, and are to-day more inclined than ever to insist on its importance. The committee has grown a very great number of foreign wheats in England, and only a very small percentage of them are able to maintain their original, or a very great, strength under English conditions. In this category are a few Canadians, some Russians, and some from other parts of the world. This ability to withstand the degenerating effects of British natural environment does not depend upon, or is not correlated with, any particular set of original, natural conditions. For instance, the Canadian Red Fife is the strong foreign wheat which up to now best answers to our requirements, inasmuch as it seems able to maintain, apparently indefinitely, its great strength; but another very fine Canadian wheat, White Fife, degenerated rapidly under English conditions. This means that in some mysterious way certain varieties of wheat are able to do well under unlikely conditions of natural environment, so that although the effect of

environment is very great it is not predominant, at any rate, in the United Kingdom.

The power of the wheat plant's inherent selective capacity works out also in questions concerning manuring. Prof. Wood has discovered that extremely weak solutions of acids, alkalis, and salts, have an enormous influence upon the physical characteristics, as distinct from the chemical constitution, of gluten. He has suspended strings of the same gluten in various solutions, and has found that in some cases the gluten is toughtened, and in other cases reduced to a powder.

He has found, also, that different varieties of wheat, say, for instance, Square Head's Master and Red Fife, have their own characteristic ash. that is to say, mineral constituents derived from the soil, and this appears to hold good even though the two varieties are grown side by side on the same soil. He suggests, therefore, that we have to look for the cause of strength not so much to the chemical constitution of gluten as to its physical state, brought about by the effects of the different mineral salts which various wheats derive from the soil. If that be so, what at first sight more attractive than an attempt to control quality by manuring? But that is where Nature has asserted her authority over anything we have hitherto been able to do. The Rothamsted Trustees and the Royal Agricultural Society have very kindly given us repeated opportunities for testing the effect of their carefully devised and long-continued schemes of manuring, and we have also tried the effect of manuring under normal field conditions. We have found that manuring sometimes has an effect, but that even where quality has been benefited, the improvement was very slight, while in some cases the effect on quality has been disastrous, and that, judged by bakehouse tests, the best flour produced from Rothamsted came from the continuously unmanured plots. Yet I do not think we ought to abandon the idea of benefiting quality by manuring.

The same result has to be recorded as to the effect of early cutting on quality. By cutting wheat "green," as it is called, you do get, not infrequently, the appearance of improved strength. Furthermore, it was thought that the wheat plant placed nitrogenous matter into the berry before starch, so that if it were allowed to get dead ripe it would have a relatively high percentage of starch. It seems to be a fact, if the process of maturation be checked at a very early state, as it is by early frosts in Manitoba, that the starch is not fully or properly formed, so that when it comes to fermentation in the bakehouse a very greatly increased quantity of gas is evolved. Some flours will not evolve in the bakehouse as much gas as they can

profitably utilise, and it may be that in the past some such variety of wheat, through being cut at a very early stage, has in fact as well as in mere appearance benefited through its gas-making capacity being profitably increased. However that may be, the committee has under carefully selected conditions tested the point as to early cutting. Mr. Hall, through chemical analyses made at Rothamsted, has shown conclusively that wheat of several varieties does not contain a diminished percentage of nitrogen if allowed to become dead ripe; Miss Brenchley, collaborating with Mr. Hall at Rothamsted in a very long and exhaustive set of microscopical tests, confirms the general results of the chemical analyses, and bakehouse tests made for the committee show also that real improvement in strength has not been effected by early cutting.

It is, or has been, believed, that rapidity of maturation is one great cause of strength in wheat, or at any rate that strong wheats are those which mature quickly. Rapidity of maturation can be due either to climatic conditions or to the inherited habit of early ripening, or to both causes. It is a fact that most Manitoba and United States spring wheats are strong and that they mature quickly, But it is also true that rapidity of maturation does not cause great strength, say, in Indian wheats. However, we thought it important to find out whether wheats sown in spring are stronger than the same sorts sown in autumn. Most of our ordinary English wheats are not suitable for the purpose, but we were able to test the point at issue thoroughly by growing more than a dozen varieties, some of them on three different soils in two seasons, one a wet one, the other a dry one. Stating the results briefly, we found that there was no difference in strength in either year due to spring sowing. We found also that among a large number grown under identical conditions as to soil and soil treatment, and with substantially the same temperatures for their respective periods of maturation, the shortest time in ripening was taken by a weak wheat, which required 38 days, against Fife at 48. In other cases similar results were shown. We found also that, though, of course, spring sown wheats occupied much less time from sowing to reaping than autumn sown, the whole saving of time was in the stage of sowing to earing. Indeed, when you come to think of it, it will be seen that spring wheat, being later, is likely to have lower temperatures for the maturing stage than the autumn sown. So we could not regard spring sowing as a means to securing stronger wheats, not is there any great need for English conditions to secure early ripening varieties; though, if a farmer has a large acreage of wheat, in view of the vagaries of our climate, it is advantageous to grow some early and some late

ripening sorts. Contrariwise, as our winters are relatively mild, we have found it possible and advantageous to sow in autumn without diminishing their high quality, varieties such as Fife, which in its own country is both strong and spring sown. However, if for any reason farmers require really good spring wheats, we want to be in a position to supply or recommend some, and are especially working to secure them. The most remarkable case I have come across in my own experience of rapid growth was the following :—On March 26th we sowed, among other wheats, seven from South Africa, and on June 6th two of them were in ear, which means they passed through that period of growth in 72 days. It remains to be seen whether they are good from any other point and whether the early ripening habit is hereditary and can be transferred into other varieties more desirable from other points of view.—*Farm and Home.*

Feeding of Chickens in Early Stages.—A good start is half the battle. Chickens which are neglected during the first three days, are seldom worth much afterwards. It does not matter whether they are artificially or naturally hatched, they require very careful feeding, during the first week. It is astonishing how strong they get in seven days if all is going well, and it is equally astonishing how soon they die off when they cease to eat properly.

Chickens with good appetites seldom suffer from bowel trouble. This disease causes more deaths than anything else, and is most difficult to cure in such tiny patients. There are plenty of people who still believe in giving hard boiled eggs and bread crumbs for the first meal. About this opinions differ widely, but there is no reason why so many people should persist in feeding their birds before they are one day old. It is better to let them remain under the hen or in the drying box if incubator-hatched, until they are at least thirty-six hours old, and have begun to chirp loudly. This is the first sure sign of hunger, and in most cases they will then eat quite readily.

For a few years now the dry system of feeding chicks has been very popular; its popularity is due not so much to its great success, but simply because it is a very handy method, and does away with a lot of extra work. Still. I believe that there will be a greater percentage of chickens reared where there is a combination of dry and soft feeding, than where simply dry food is given. As to the number of meals to give per day there can be no hard and fast rule ; only it is as well to remember that little and often is the best guide. Those who leave plenty of food on the ground will most likely have to suffer for it.

It is highly important that the first meal be given early in the morning. It ought to consist of warm soft food, such as scalded biscuit meal (free from meat, as this may cause bowel trouble), mixed with a little bran and fine sharps. On no account must the food be given in a sloppy state, better to have it too dry than too wet.

The little chicks should be kept indoors for the first week, especially during the early part of the season. They might be given a little finely-chopped grass or other green food, but it must be very fresh, anything stale must be carefully avoided. It is not safe to keep chicks many days on boarded floors, as this is apt to cause leg weakness, which is much sooner contracted than got rid of. Some people will throw ashes on the floor or fine sand; the latter is all right if fine, for although it is somewhat cold for the chicken's feet, still it is very cheap and this is a consideration.

Granulated peat dust is undoubtedly the best thing to use, yet few utility poultry-keepers will take the trouble to purchase it. The only drawback I know is that in windy weather it is apt to blow into the eyes of the chickens and of the attendant.

During the early months of the year the first meal should be given at daybreak with others to follow at intervals of every three hours, but only just as much as the chickens eat greedily should be given at a time. It is a bad policy to have food thrown on the ground in sight of the birds after they have been fed. The last meal should always consist of a good dry mixture. There are many such on the market, but there are also some that will do far more harm than good, so it is as well to use one of the popular brands. Fine grit, both flint and oyster shell should be placed in a dish near the coop. In the case of natural rearing the mother hen should only be allowed out with the chicks a few hours at a time on fine days just when the sun is out, and this will not be often in January and February. It is of no use trying to rear chicks in the natural way and let the mother drag the chicks out wet or fine, for even, if there was a good hatch at the beginning the number will soon be considerably reduced. When the hen is cooped up the chicks will not stray far away, and will go under cover when the weather is not suitable. Of course, if one has a disused stable or shed, it is different; then more liberty may be allowed with advantage.

Early in the spring months mother hens can be seen taking their chickens on long rambles before breakfast. This is not a wise plan. It may be a fine time for the mother, but works havoc with the little chicks. For successful rearing much depends on the nature of the mother. Some hens are about as careless as they very well could be,

while others are as thoughtful as any human being, and seem always to be looking out for the comfort of the little ones. The attendant can do a great deal to improve almost any hen by looking after her well in the early stages.

Often the best of mothers are those which will only allow the regular attendant to go near them, and if a stranger comes along they fly straight at him, and do all in their power to protect their charge. Again, there are a few hens which are very quiet at all times : these are certainly the best, but sometimes they are a little clumsy and crush some of the chicks to death. I do not care for very heavy hens for sitting purposes ; they spoil a number of eggs, and when the time comes for them to brood the chicks, they do not seem able to keep them from under their feet.

Only those who have experience can imagine the vast difference there is between mothers ; there are some which are not fit to have chicks at all. On certain occasions hens will kill the chicks as fast as they come out of the shell. This is often so with pullets which bring out a brood for the first time, but though some which have done badly the first time prove all right when given a second chance, few people care to risk eggs when they have had poor results the first time.

When the chickens are three weeks old they ought to be very strong, and past the danger zone, to a certain extent. Of course there will be plenty of trouble with them for many more weeks, but the delicate period is over and they will stand more exposure to cold. Still, the better they are looked after the quicker they grow, and it seems foolish to give all possible attention for so long and then neglect them just because they look as though they will do with feeding about three times daily, on the food given to the ordinary fowls.

This is where a host of people make a great mistake ; chickens intended to make fine strong adults will require a lot of attention until they are four months old. It is more from neglect than anything else that there are so many failures. Women in general have been styled the finest chicken rearers, simply because they have more patience than men.

Anyone who tries to rear chickens in a happy-go-lucky way will lose at least 20 per cent. before they reach maturity. In nine cases out of ten the weather is blamed for what really is nothing but bad management.

Cleanliness is essential ; those who neglect this will soon find the chicks troubled with a lot of insects, pests which are difficult to get rid of and sorely hamper the growth of the birds. The coops should be

cleaned out every day, and be kept fresh and sweet; no food must be left on the ground unless it be a little of the dry chick food, when there is an enforced absence from home.

At six weeks old the mother hen may be removed. Some people allow the hen to stay with the chicks till she chooses to leave them. This is not wise.

In the cases of the lighter breeds it is quite possible to distinguish the sexes at this age, and the sooner they are separated the better. It is surprising how they seem to grow when each lot has separate quarters. Of course, this entails work and expense, but it is more than repaid in other ways.

About this time the dry chick food may be discontinued, unless a cheaper kind made up of less and larger seeds can be obtained; it is no use feeding the birds on expensive stuff if there is something cheaper which will do quite as well.

Wheat may then be given with perfect safety, and ordinary nourishing soft food during the day. Of course a few chickens will die off, but there should be a very low percentage of losses if the rearing methods are up to date.

Some chicks are born weakly, and no matter how well cared for would eventually die. The sooner these are out of the way the better are the prospects of those which remain.

Rearing chickens artificially is difficult, still it can be done, and there is no reason why every man who is in the poultry business on a fairly large scale should not do it.

It is not the foster-mothers which are generally to blame for failures, it is the attendant who goes the wrong way about the business and does not employ much common sense.

Overcrowding is by far the greatest evil. Some foster-mothers advertised as suitable for 100 chicks will not rear above fifty comfortably. What is the use of placing 100 one-day-old chicks in a foster mother, for which, when they get a month old, it will be much too small?

I have tried all makes of brooders but can never do well with many more than fifty in one brooder.

Over-heating is the next evil and a common one; ninety degrees is all right for the first week, but it must never be exceeded, and after the first few days it ought to be gradually lowered.

It is attention to these details which makes all the difference between good results and bad, and with proper care there is no reason why artificial rearing should not be universally successful.—"HEATHERLEA" in *Farmer and Stockbreeder Year Book.*

Nitrate of Lime.—In a lecture recently given before the Bedfordshire Chamber of Agriculture, Mr. H. M. Freear said :—

In considering a great industrial advance, one naturally goes back to a beginning, often to find that the investigator was engaged on quite a different quest to the one that rewards him for his many hours of patient and often laborious work. For instance, it was about 130 years ago, that Priestley found it was possible to make oxygen and nitrogen combine, by submitting them to the influence of an electric current. But the conditions of those days were not sufficient to enable him to turn his discovery to full commercial account, and the information became therefore a further addition to the store of apparently useless knowledge that had been accumulating for ages.

Later on, or about 120 years after Priestley's discovery, we find this so-thought "useless knowledge" is of importance, and can be turned to practical use. Crooks, in 1898, was calling attention to the fact that the available sources of nitrogen, necessary for the growth and production of our food-giving plants, were showing signs of rapid exhaustion. The increase of population, by its extra demand for more wheat, in addition to the requirements of many of our manufacturing processes, have shown only too plainly that the nitrate of soda deposits of South America cannot stand the big demands now being made on them for many more years. This brought the opportunity of seeing whether the circumstances of Priestley's day had sufficiently altered to enable us to turn his discovery to practical use. We next have the inventor, who, with increased facilities at his command, works out a method by which the so-thought piece of useless knowledge of 120 years previous can be turned into useful form.

Two Americans were the first to harness the forces of Niagara to generate a supply of electricity for the practical application and further development of Priestley's discovery. But like many other first attempts, their work was not to be rewarded by financial success, though they succeeded in demonstrating the possibility of accomplishment, which was completed by the Norwegian physicist, Birkeland, working in conjunction with his countryman, Eyde, an electrical engineer of repute. At the present time I believe the whole of the nitrate of lime coming on the market is produced by the Birkeland-Eyde process. Whether or not the manufactured article will be able to replace, or perhaps I should say, take the place of, nitrate of soda, remains at present to be demonstrated, but so far as the work has at present gone, there appears to be nothing of vital importance to prevent it so doing. Success having attended their efforts so far, the next step was one of commercialization, and

our Norwegian friends have shown themselves able to cope with this side of the question. It is at the stage, when the product has to be utilised, that farmers become most interested, but we must not forget that its use as a fertiliser is only one of the many to which it can be, and is being applied. I think we shall all acknowledge our indebtedness to science for providing us with these new sources from which to obtain nitrogen for the growth of our crops.

The supply of nitrogen from the atmosphere would appear to be almost inexhaustible when we remember, that according to Frank's calculation, there are about 31,000 tons over each acre of land comprising the surface of the globe. In other words, the still air over an area of about nine acres would contain as much nitrogen as the 1,740,000 tons of nitrate of soda that were exported from Chili in 1907.

The question having been started as to how long the nitrate of soda deposits would last, was soon altered into the one of how soon will a method be devised by which we can utilise this atmospheric nitrogen? and it is of interest to note the different ways in which the solution of the question has been attempted. One set of investigators were bent on finding a way by which they could get the nitrogen from the air absorbed, leaving the oxygen behind. The result of this work was called cyanamide, or nitrolim. The simple process of heating air in a suitable furnace, to a temperature of about 400°C., and then passing it over copper turnings, was the method by which the nitrogen and oxygen composing the atmosphere were "separated," the free nitrogen being passed on to be absorbed by Calcium carbide, the resultant product when cooled and ground into a fine powder being the nitrolim or calcium cyanamide that is sold to us to-day.

Let us now pass on, and I will try and explain to you in language as free from technical terms as I possibly can. the details of the process, as worked at the present time in the Norwegian manufactory for the making of nitrate of lime, the outcome of the work of the investigators who sought to combine the two gases, in preference to separating them, as explained in the manufacture of nitrolim. The whole secret of Birkeland and Eyde's success appears to be contained in the electrical furnace they were able to construct, and in which the air is burned. The strong electrical current is conveyed to the furnace in much the same way that it is conveyed about our towns for lighting purposes, an electric spark is caused, and it is around this peculiar form of spark that the air is practically burned.

The flame chamber where this operation is carried out has a

temperature somewhere between 3,000 deg. and 3,500 deg. C. and the escaping gas as it passes out is found to be from 800 deg. to 1,000 deg. C. The necessary air for consumption in the furnace is supplied by a series of centrifugal fans. If you could now see the gas as it passes from this electrical chamber, you would at once realise the difference between nitrogen and oxygen, as a mixture forming the air around us, and oxygen and nitrogen as a compound.

This latter gas is passed from the generating furnace into large collecting pipes about 7ft. in diameter which are used to cool the hot gas as it passes through, The gas is subjected to further cooling by passing through aluminium pipes over which water flows continuously; it is then ready for further oxidation into nitric acid, which is afterwards absorbed by drawing the gas through large stone towers filled with flints, and down which a stream of water is allowed to run. There are four of these towers in use at the Notodden works, the gas coming in at the bottom of the first tower is drawn to the top, meeting in its upward course a falling spray of water, thence it passes into the second tower, etc., till the air leaving the fourth tower is quite free from nitrous fumes. By this method about 97 per cent. of the gas is recovered in the solutions as they leave the absorption towers,showing a most remarkable and efficient working of the process. The nitrous acid formed is absorbed in the last tower, which is made of wood, and down which caustic soda is allowed to flow in place of water. This solution is afterwards concentrated and crystallised out, the nitrite of soda being sold to the aniline colour makers.

The solution containing the nitric acid obtained from the first three absorption towers is next passed into big vats which have been partially filled with chalk, with the result that the carbonic acid is driven from the chalk and nitric acid takes its place, leaving in the vats a solution of nitrate of lime.

The final stage in this rather complicated process, is to run the solution of nitrate of lime into large evaporating pans, where the liquor is concentrated till it contains about 13 per cent. of nitrogen. It is then allowed to cool, with the result that it crystallizes out into a solid mass, after which it is ground into a fine powder, packed in barrels, and is ready for the farmers' use.

It will be noticed probably that the colour of different samples of nitrate of lime varies; this must not be taken as in any way indicating that the darker product is of less value than the lighter ones, or vice versa, the difference being entirely due to the different coloured chalks that are used to absorb the acid, and it in no way indicates the percentage of purity of the sample.

Such is a brief account of the methods science has evolved to rob our atmosphere of its nitrogen. Having explained the respective processes that are being worked now on a commercial scale for the production of the two new fertilizers, we can consider their action, not only on plant life, but the effects they are likely to exert on the mechanical conditions of the soil. In the first place I would impress on you that the chief ingredient in both nitrate of lime and cyanamide, that we can consider as a plant food, is nitrogen. It is quite true that both contain a certain amount of lime, and that that lime probably stands in greater value to the plant, than either the soda in nitrate soda or the sulphuric acid in sulphate of Ammonia, but still the chief point we have to take into consideration is the amount of nitrogen the samples contain.

A nice clean well made nitrate of lime would yield about 12¾ per cent. nitrogen, and 26 per cent. of lime, which is soluble in water; there would be in addition about 2 per cent. insoluble matter, the remainder being water and oxygen. Now we have to remember that all cultivated plants, in order to thrive, require nitrogen, phosphoric acid, and potash, and experience has shown that it is necessary for all three of these substances to be present, that it is not enough for the plants' development if two are there in abundance but the third is missing, and further, it is also necessary that the three substances shall be in the soil in such a form, that they are easily soluble, and can be taken into the plants' system as required. Experience has shown that the substance generally deficient in soils is nitrogen, the available forms of nitrogen for the plant being easily washed away into the drainage water, and lost. On this account we generally see a greater result from the application of nitrogenous manures than from mineral manures, such as superphosphate or potash, but it by no means fellows that the financial results are likewise better from the giving of Nitrogen only. Further we must not forget that the plant takes in its nitrogen in the form of nitrate, it therefore becomes necessary for other forms of nitrogen to be converted into nitrate, by the soil organisms, before the plant can avail itself of this part of its food. Now of the new nitrogenous manures, nitrate of lime and cyanamide, the former has its nitrogen in the readily available state. the latter requires its nitrogen to be acted upon by the nitrifying organisms before it is available. This same difference existed in the two older manures, nitrate of soda and sulphate of ammonia. It was necessary for the sulphate of ammonia nitrogen to be converted into the nitrate form before it could be used by the plant, and it is likewise necessary for the nitrogen of nitrolim to be also turned into the nitrate before the plant can utilize it. On

the other hand, both nitrate of soda and nitrate of lime, contain their nitrogen in such a form as to be of immediate use to the plant, without the intervention of the soil organisms. There is one point in which nitrate of lime may show its superiority over Nitrate of Soda and Sulphate of Ammonia, and that is not so much in the effect it produces on the growth of the plant, as its after effects on the soil.

Nitrate of lime contains the least amount of nitrogen of the four nitrogenous manures commonly in use, having about 12·5 per cent. against 15 per cent. in an ordinary sample of nitrate of soda, and 20 to 20½ in sulphate of ammonia and nitrolim. That is to say, an ordinary sample of nitrate of soda containing 15lbs. of nitrogen in every 100 of the salt, would require 120lbs. of nitrate of lime to give the same amount of nitrogen. And if we take nitrolin or sulphate of ammonia as having 20½lbs. nitrogen in each 100lbs. of the substance, then we should have to take 164lbs. if we wanted to replace them by nitrate of lime.

Nitrate of lime is a greyish white crystaline substance, having much the appearance of ground chalk or limestone. It has one very decided fault, its great attraction for water. On opening a fresh cask it will be found in a nice dry and workable condition, but if the cask be left open to the atmosphere, in a very short time indeed the top layer of nitrate will have become quite sticky, and very objectionable to handle. This, of course, becomes a serious matter at the time of distribution, as should the day be at all damp, the manure will stick to the machine and cause a lot of trouble. The difficulty is sometimes obviated by mixing the nitrate of lime with dry earth before putting into the distributor, but this mixing has to be done at home beforehand, and entails extra work in carting to the field. In 1910 I started some experiments in connection with this point of " stickyness " to see if we could overcome it by some method that would be simple and inexpensive. In my last experiment I mixed the nitrate of lime with some dry cyanamide or nitrolim, and this answered admirably, and I think it improved both the manures. It got over the very objectionable feature of cyanamide by preventing the fine dust from flying about and getting into the men's eyes and throats, and, on the other hand, the free lime present absorbed the moisture. and prevented the nitrate of lime from becoming sticky. The value of the two manures was in no way reduced; in fact, I am inclined to think this is the proper way to use them, and for this reason, the available nitrogen from the nitrate of lime is ready for the plants' immediate requirements, and is being used up, while the organisms are busy

putting the cyanamide nitrogen into an available form. This method necessitates a short calculation before starting mixing, but I am sure you will find that the time it takes is quite infinitesimal compared to the time taken in clearing the distributor so that it can work properly. It is not advisable to broadcast the nitrate by hand as it causes sore places that are difficult to heal. Neither is it advisable to mix soluble phosphates (superphosphates) with either nitrate of lime or cyanamide. Much the same reaction occurs with nitrate of lime that takes place when nitrate of soda is mixed with superphosphate, the free acid of superphosphate driving off the oxides of nitrogen which means you are dissipating into the air the very substance you have been anxious to buy, viz.:—nitrogen.

The case of mixing nitrolim with superphosphate is not quite the same, as the action is chiefly on the soluble phosphate, which is caused to revert, and is again a loss that must be guarded against. Possibly the most suitable method of using nitrate of lime will be found to be as a top dressing. In this manner of application its power of absorbing moisture will prove (after it has been sown) of benefit rather than otherwise, as it will attract water to the surface of the soil, and make a little damp patch wherever it has fallen. This means that a weak solution of nitrate of lime is ready at once for the plants' wants, and in conjunction with its rapid action, makes it a valuable manure for forcing on a crop which is suffering from insect attack. Many experiments have been carried out in this country, and abroad, to test the value of nitrate of lime as a manurial agent, compared against the older nitrogenous manures to which we are accustomed, such as sulphate of ammonia and nitrate of soda. So far as this experimental work has gone, nothing, so far as I am aware, has come to light to show that the nitrate of lime is in any way less effective than nitrate of soda. There are the inconveniences at the time of sowing, that have been mentioned, but these do not apply in any way to the effects of the manure on plant life. In fact, at many stations where the soil is known to contain only a small percentage of lime, the results of using nitrate of lime have been most encouraging, and point in a most decided manner to the lime the manure contains playing a very important part. To take one case, Mr. Hendrick found in his work at Aberdeen as the general average of thirteen experiments carried out at 15 farms in three different seasons, that the largest increase was given by nitrate of lime, when used in such an amount as to give the same quantity of nitrogen as 1 cwt. of sulphate of ammonia; all plots but the control, having superphosphate 2 cwt., and potash 1½ cwt. per acre. The figures are interesting in so far as they show the slight

value that phosphoric acid and potash salts have on the cereals, when given without nitrogen, in addition to the point we are at the present moment considering. The results were as follows :—

Crop Barley.	Corn. lbs.	Corn. bushels.	Straw. Cwts.
Plot 1—No Manure	2,196 ...	39·2 ...	27¾
Plot 2—Super. 2 cwt., Potash 1½ cwt. ...	2,260 ...	40·4 ...	29
Plot 3—Ditto, with Nitrate of Soda ...	2,595 ...	46·3 ...	35¼
Plot 4—Ditto and Sulphate of Ammonia ...	2,668 ...	47·6 ...	37
Plot 5—Ditto and Nitrolim	2,680 ...	47·8 ...	35
Plot 6—Ditto and Nitrate of Lime ...	2,816 ...	50·3 ...	38¾

Nitrate of lime was used in two seasons only out of the three, and the results were most consistent in both experiments.

Experiments with oats at Cockle Park went to show that 139 lbs. per acre of nitrate of lime gave a better result than 112 lbs. of nitrate of soda, and in a series of experiments on potatoes, the results were practically the same from the use of nitrate of soda, nitrate of lime, or sulphate of ammonia. At our own experimental station at Woburn, a curious point in connection with potatoes came out. They were grown in the Warren field, and the nitrogenous dressings used, in addition to the dung, were nitrate of soda, Sulphate of Ammonia, nitrate of lime, and cyanamide. The actual greatest increase was from the Sulphate of Ammonia plot, a result previously experienced at the farm. This amounted to 1 ton 7 cwt., per acre in the total crop, but it is remarkable that calcium nitrate, while producing 13 cwt. less total crop, gave 2 cwt. more per acre of saleable potatoes, and fewer diseased tubers. At Woburn nitrate of lime did not do so well as nitrate of soda, in an experiment on wheat, but with mangolds it produced heavier crops than either of the other manures. There have not been many experiments at present carried out to test the value of these manures on grass land. In 1909 the Aberdeen people selected plots and dressed them all with superphosphate and potash, then giving to one portion 1 cwt. Sulphate of Ammonia, another plot received 1½ cwt. per acre Nitrate of Lime, and to a third plot 1⅛ cwt. nitrate of soda. Practically this meant that each plot received as much nitrogen from these different substances as was contained in 1 cwt. of sulphate of ammonia. The result of this work went to show that nitrolim was unsuitable for grass land, and that it was quite possible to substitute nitrate of lime for either nitrate of soda or Sulphate of Ammonia without affecting the yield.

From these experiments you will be able to judge, that there is very little to choose between the four manures now at our command to supply the nitrogen requirments of the plant, provided the price

per unit is the same in each case; and as the manufacturer of each will probably see that his competitors do not undersell him, there is not much chance of anyone of them being much cheaper than the others. But there is one remaining point that may be taken into consideration when deciding which manure to buy, and that is—what will be the after effect on the land?

It may not generally be known that the difference between a clay soil and a sandy soil is one that is largely due to the size of its component particles. A clay soil is composed for the most part of the finest particles; on the other hand, a sandy soil is composed for the most part of the largest size particles, and it is this fact that regulates the different operations we perform in the cultivation of our fields. The light soil man rolls and consolidates his land with the idea of compressing the large particles closer together, and so retaining moisture, by limiting the interspaces between the particles. The clay land farmer works on the opposite line, all his operations are done with a view to lightening the soil, and so permitting drainage and consequently better aeration, and it is largely to these causes that our friend "Dung" owes so many of its good qualities, and on the other hand so many of our artificial manures owe their bad qualities. Let me instance one case. If you take nitrogen away from nitrate of soda, as the plant does, you have the base soda left to combine with the first thing that comes in its way, and that is generally carbonic acid. The product is carbonate of soda, a substance that causes the particles of the soil to run together, and prevent proper aeration and drainage, with the result that the land ploughs "livery," a condition well known to those who farm heavy land, and have used nitrate of soda in heavier dressings than 1 cwt. per acre. Then on the other hand, the use of sulphate of ammonia on our Woburn sand, has dissolved out the organic matter and caused the spaces between the particles to become larger, with the result that lime has been washed away into the drains, and the land has become so acid that it will not grow a crop of barley. It is on these grounds that nitrate of lime will prove a valuable manure; it will be as quick acting as nitrate of soda in stimulating the plants' growth, and will when applied to a clay soil, help both the drainage and aeration, making the land work kinder, and better for its use. On light land it will supply a small dressing of lime, which, of course, will be an advantage, and though the amount that will actually be given to an acre of land will be small, yet it will probably be sufficient to prevent the land from getting into the acid condition that has been brought about on some of our plots at Woburn, by the continuous use of sulphate of

ammonia. We cannot but welcome the advent of these two new fertilisers. The so-thought useless knowledge of 120 years ago has become a source from which not only the farming community have derived benefit, but the community at large, for a danger that threatened their food supply has been removed.

Johne's Disease. - About a year ago, in reply to a query, I gave a short description of Johne's disease. Although I have not heard of any excessive individual losses amongst cattle from this trouble in Scotland. it is not at all rare ; at any rate I have come across it in my practice quite often. In England it appears to be much more prevalent, probably due to there being more land in permanent pasture ; and the losses have been so severe in some places that just lately one of the farmers' clubs have decided to ask the Board of Agriculture to hold an inquiry as to its cause and origin. I think it was the Duke of Norfolk who had to destroy his whole herd on account of the ravages of this disease. In the Channel Islands—where cattle are practically free from the scourge of tuberculosis—it is very common, and about 8 per cent. of the deaths of cattle in Denmark are due to Johne's disease.

This disease was first described by Johne, of Germany, in 1895, and in this country Sir John M'Fadyean was the first to diagnose it. The disease is caused by a bacillus, which in staining reaction, size, and shape cannot be distinguished from that of the bacillus of tuberculosis. It cannot, however, be cultivated artificially, but the bacillus of tuberculosis can ; nor will experimental inoculation of the laboratory animals, such as guinea pigs and rabbits, produce the disease, whilst these animals are very susceptible to inoculation by the bacillus of tuberculosis. Again, cattle suffering from Johne's disease will not react to the tuberculin test unless affected with tuberculosis at the same time. There is no doubt that, previous to this disease being described, most of these cases were diagnosed as tuberculosis of the bowels (*tabes-mesenterica*), and because they failed to react to tuberculin the test was wrongly blamed. Lately, Olaf Bank has shown that cattle afflicted with Johne's disease will react to tuberculin made from the tubercle of fowls (*avian tuberculin*).

The common method of infection is by ingestion, and no doubt it is spread from animal to animal by the food, for, as will be shown later, the fæces of an affected animal are swarming with the bacilli. The chief symptoms are diarrhœa and emaciation. At first the animal may only show signs of unthriftiness, but very soon diarrhœa sets in and becomes chronic, the animal falls off rapidly in condition, and in time becomes a walking skeleton, although, as a rule, the

appetite remains good. A very common time for this disease to assert itself is shortly after calving, the reason probably being that the natural defences of the body are lessened owing to the extra drain on the system during pregnancy and lactation, so that the bacilli get, as it were, the upper hand. A certain diagnosis is difficult while an animal is alive, but when showing symptoms of chronic diarrhœa and rapid wasting, it does not react to the ordinary tuberculin but to avian tuberculin, or if the fæces be examined microscopically and bacilli similar to the bacillus of tuberculosis be found it would be strong evidence of Johne's disease. Before cattle suffering from tuberculosis show symptoms of diarrhœa there is certain to be extensive tuberculosis of other organs besides the bowels. After the animal is dead a certain diagnosis can be made, and seeing diarrhœa is one of the chief symptoms, it is to the intestine we look for evidence of disease. It is always the small intestines that are affected, although in advanced cases in part of the large bowels lesions may also be found. It is due to the seat of the disease being in the small bowel that wasting is such a prominent symptom, as absorption of food takes place in this bowel, but owing to the disease being situated there no absorption can take place, and the animal, although eating sufficient, dies slowly of starvation. On opening the carcase and gripping the small intestine it will give you the impression of being thick and swollen. When slit up, the lining membrane shows a decidedly wrinkled appearance, just like corrugated paper, and although you stretch the bowel it is impossible to obliterate this wrinkling. There are no ulcers or nodules to be found, as would be the case if it were tuberculosis. The lymphatic glands in the vicinity of the affected bowel are much enlarged, and if scrapings from the lining of the bowel or lymphatic glands be stained and examined microscopically, the bacilli will be found to be abundantly present. No bacilli can be found in any other part of the body with the exception of the fæces. No animal having once shown the symptoms of diarrhœa and emaciation has been known to recover, and the only thing to do, until a cure is found, is to try and make an early diagnosis, and when this is done destroy the animal, as it would only expel bacilli, which contaminate the buildings and land, and thus spread the disease. The disease mostly affects cows, but it has been found in both sheep and deer. The incubative period—*i.e.*, the time between the animal becoming infected and until the clinical symptoms are shown, is fairly long, probably a year or more.—NEIL GOW in *The Scottish Farmer*.

The Farmer's Library.

NOTES AND REVIEWS OF NEW BOOKS.

1.—*The Standard Cyclopædia of Modern Agriculture.* London: The Gresham Publishing Co.

Since the last issue of our Journal this extensive work on modern agriculture has been completed, Volumes 11 and 12 having now been published. We have from time to time drawn attention to the excellence of the previous volumes, and these last ones maintain the high standard which the Editor, Sir Robert Patrick Wright, adopted from the first.

We know of no work on English Agriculture so complete as this, and as it is up to date it supplies the latest information upon all subjects of interest to farmers. Even in the few years occupied by its production new subjects, such as Beet Sugar and Dry Farming, have come to the front and are now of interest, and these are consequently treated specially in an appendix, together with the latest results of Legislature affecting agriculture, *e.g.*, the Agricultural Holdings Act (Scotland), the Agricultural Development and Road Improvement Act, Duties on Land Values, etc.

Volume 11, which treats of subjects from "Shropshire Sheep" to "the Triassic System," is devoted mainly to short articles, concise and to the point, and often well illustrated where this can help to illucidate the letter press. Of the more important articles, the one which has attracted us most is that on Soils, contributed in the main by Dr. E. J. Russell. It is a thoroughly up-to-date article, and will well repay the most careful study by agriculturists. This is followed by an article from the pen of Mr. D. Houston on the Bacteriology of the Soil; the comparatively new but already important aspect of soil science. In order that the cyclopædia may be of value, not only to farmers in this country but also to those in our colonies, care has been taken to treat rather fully subjects which would be of special interest to those abroad. Thus we have an excellent article on agriculture in South Africa, and shorter ones on Cane Sugar, Tea, and Tobacco. The illustrations

are excellent, one in colours, on the Parasitic fungi of grain crops, which forms the frontispiece to this volume, being of quite exceptional merit.

Of the many important articles in Volume 12, we can only notice a few. Professor B. Bang, of Copenhagen, writes on Tuberculosis in a most moderate and scientific spirit. After reviewing the work recently done he states: "It is a common opinion to-day that Bovine tuberculosis ought not to be lost sight of as a source of human tuberculosis."

Veterinary science is treated in a condensed and most simple manner by F. C. Mason, of Dublin; it is an excellent example of accurate science with a minimum of scientific terms. We note that the author does not mention Izal when referring to various antiseptics, although this substance is certainly one of the most powerful and least injurious of modern antiseptics. Dr. J. A. Voelcker, the Consulting Chemist to the Bath and West Society, writes a brief but appreciative article on the life work of his father, and draws attention to the admirable articles which the latter contributed to the Society's Journal so far back as 1855–56. These articles were certainly land-marks in the history of agricultural chemistry. At the present day, when an attempt is being made to improve upon our present "Weights and Measures," an article on this subject by A. G. L. Rogers, head of the Intelligence Department of the Board of Agriculture, may be read with advantage, and those who take the trouble to do this are likely to be induced to help on the movement for reform which has recently been started by the Chambers of Agriculture. Welsh Ponies and Sheep are treated in three separate articles. A long and well illustrated article is devoted to Wheat, while the most complete and extensive treatise in the book is that on Wool. Such are only a few of the subjects which have specially attracted our attention.

The real value of this Cyclopædia lies in the short articles perhaps more than in the long, for they cover all the details of farming and are those most likely to be consulted by the average user of a Cyclopædia. Frequently when reading agricultural journals, one comes across words which are so seldom met with that our notion of their exact meaning is not always clear. Then it is that one turns to such a cyclopædia as this for help, and invariably finds it.

We congratulate the Editor, the Publishers, and all others connected with the production of this work on the completion of their arduous task. We do not think we can say more than that in our opinion it is worthy of its name—the Standard Cyclopædia of Agriculture.

2.—*New York Agricultural Experiment Station.* 29th Annual Report.

Now that the question of Agricultural research is being so much talked about in England, and the need of experiment stations is being felt, especially in the West, it may not be out of place to give some idea of the work done by this one of the many experiment stations which exist in the United States. First we will select some extracts from the Director's Report to show to what size and importance the Agricultural Experiment Station has risen in America. Speaking of the staff he says :—

> "The number of persons on the staff who are giving expert service in conducting experiments and investigations is now thirty. The number of helpers in the various departments, including stenographers, engineers, janitors and foremen, is twelve, while the common labourers vary from twenty to twenty-five. The scientific staff is divided among the several departments as follows: Animal husbandry and farm 3, bacteriology 3, botany 4, chemistry 8, entomology 4, horticulture 5, library and editorial work 1, special agents 2."

One would say that such a well-equipped institution had no further need, but this is not the opinion of the Director, who says :—

> "The station has now certain well recognised needs which should be met if it is to keep pace with its opportunities for service."

Before proceeding to enumerate these wants, he makes the following general remarks which it will be well for those interesting themselves for the first time in a research station in this country to bear in mind :—

> "When an educational institution ceases to grow there is room for reasonable doubt as to whether it is sufficiently responsive to new opportunities for service. This is especially true of an institution which has the agricultural people for its constituency, in view of the rapidly increasing demands that farmers are making upon all the public agencies established for their benefit. Farm practice is more and more insistently asking that science solve its problems and direct its methods. This means that the agricultural college and experiment station must develop their equipment somewhat in proportion to the work they are called upon to do, or else be constantly forced to confess their inadequacy to cope with the situation that is thrust upon them."

In England as elsewhere one of the drawbacks to progress of any

kind or in any direction is the foolish position of persons who ask: what practical advantage is to be gained by such new ideas? The position they take up is well rebutted in the following sentence:—

"When the Station once demonstrates under a sufficient variety of conditions that the lime-sulphur solution will destroy the San José scale and that some other preparation will not do this, there is no reason, so far as the station is concerned, why it should repeat this work in every fruit county in the State. Many facts demonstrated in one place hold good for all places. The Station's duty is done when it has distributed this information freely to its constituents, and it should then pass to new problems that are waiting. There is little to commend in the assumption that knowledge should be injected into farmers without effort on their part, and there is little hope, even if the injecting process is attempted, that farmers who refuse to grasp and utilise valuable information that is within their reach will ever become inspiring examples of success. One of the most absurd propositions of the day is that success can be imposed on farmers any more than on men engaged in professional or commercial vocations."

These words—"One of the most absurd propositions of the day is that success can be imposed on farmers"—are as true of English as of American ideas.

To select one subject out of the many which have been recently investigated at the Station and are reported on in this volume, we may mention some researches as to "the effect of individual cows on the profit obtainable in dairying." The same subject forms to a certain extent the theme of the article in the "Note Book" on dairy records (p. 165). In discussing the results of the investigation Mr. G. A. Smith, the dairy expert at the station, says:—

"Another comparison illustrating the effect of yield on net results may be made by taking the production of milk and cost of food of the best nine cows and comparing with that of the nine cows making the poorest yield, using for this the figures of 1908.

DIFFERENCE BETWEEN BEST AND POOREST HALVES OF HERD.

	Milk.	Cost of Food.	Cost per 100lbs.	Total. fat.	Cost of fat.
	lbs.		Cts.	lbs.	Cts.
Best nine Cows	7,415	\$62·85	85·6	418·1	15
Poorest nine Cows	5,453	\$58·40	117·0	290.1	21

This shows that with the poorest nine cows the average production of milk was 1,962 pounds less, and of butter fat 128 lbs. less; while the cost of food was only $4.45 less. The milk cost 31·4 cents more per hundred and the fat cost 6 cents a pound more. Taking the average price reported as being received by farmers the past year as a basis, namely, $1.35 for milk and 33 cents for butter fat, the income from each of the best nine cows would be $100.10, or for butter fat $137.94; while for the poorest nine it would be $73.61 for milk, or $95.73 for butter fat, a difference of $26.49 for milk and $42.21 for butter fat. Taking from this the difference in cost of food of $4.45 and we have $22.04 in favour of each of the best cows in return from the sale of milk or $37.76 from the sale of butter fat. That is, if we had substituted for the nine poorer cows nine as good as the better half of the herd it would have increased our revenue $237.41, it we had sold milk, or $379.89 if we had sold butter fat, with no added expense except $40.05 for food.

"In seeking the reason for the complaint that dairying does not pay, some books containing the record of the account of manufacturers of dairy products with the farmer have been examined. The figures obtained show that the variation in results secured by individual farmers is fully as great as the difference in yield of the individual cows of the Station herd. In one case a farmer with eight cows received an income of $877 in the year. In the same part, the same year, another farmer keeping twenty-two cows, received $868. He had done all the work of caring for and feeding fourteen more cows to get about the same income. Figuring the income on the basis of the cow one man receives $109, as against the other man $39, a difference of $70 a head. The explanation often given by the man with the small returns per cow is that the other man paid out the extra amount for grain. He probably did feed more grain; but consider all the hay and other coarse food' that it took to sustain life in those extra fourteen cows not counting labour! In another locality some of the farmers secured an average of 300 lbs. of butter fat per cow, and others in the same time went as low as 80 pounds, a difference in income of $100 for the best, against only $26 for the poorer yield. It is impossible by any stretch of imagination to figure a profit for the man keeping a herd of cows returning him only $26 a head. The only conclusion to be reached from the data secured is that a few farmers in every neighbourhood have solved the question of profitable dairying by breeding and

properly caring for good cows, while large numbers are paying no attention to any of those details and are blaming their lack of success to prices.

"From the above facts it is readily seen that the dairy business has become a much more complicated financial proposition than it was at its inception, and that there is now much more opportunity for financial loss than when the labour of the farmer was the only item at stake. With conditions as they are, the individual producer can do little to increase the price obtained for his product and with the increasing of labour cannot expect to reduce materially the cost of feeds. Practically the only opportunity for increasing his profits which is within his control is through increasing the productivity of the individual cow by keeping and breeding from his best and eliminating the ones that are not making a suitable return for the food consumed."

The Director of the Station, commenting upon these results in his introductory report, says :—

"The best cow produced almost exactly three times as much milk, or more than twice as much butter, on only one-tenth more food. Such wide variations are found in relatively well-bred herds and larger variations occur in ordinary herds.

"Since the price of both food and dairy products are largely fixed by others the single avenue of increased profits within the control of the dairyman is that of increased productivity from individual cows. This may be obtained by keeping and breeding from the best, and eliminating those which are not making a suitable return from the food consumed."

It is by work of this description that the dairy farmer, if he is willing to learn, may see how to improve his herd and how to make a profit from his cows, and the truths which are brought home by this report apply as well to the West of England as they do to the State of New York.

The above extracts are taken from one single report of sixteen pages, taken from a volume of 600 pages, required to give an annual report on the work of an Experiment Station. And we in England are only talking about starting such stations. Surely it is necessary for us to "Wake up."

3.—*Mendelism.* By R. C. PUNNETT. London: Macmillan & Co. 5s.

It is impossible at the present day to read agricultural papers without finding occasional references to Mendel, Mendelian laws, or Mendelism. Hence, What is Mendelism? is a question which is frequently being asked by the non-scientific reader. It is a question exceptionally difficult to answer in ordinary parlance. Moreover, if one takes the trouble to read articles on the subject one is soon bewildered by a new scientific jargon which is continually cropping up. This renders the article sometimes uninteresting, more often quite unintelligible.

Is it worth troubling about? the reader asks himself or his friends. The answer to this question which would be given by anyone who understands the subject would be "most certainly." More especially would this be the case if the enquirer were a farmer interested in the breeding of some form of live stock or plant.

Mr. Punnett's book would probably be called a popular explanation of Mendelism. In spite of that it will need careful study by anyone who first starts to acquire some idea of Mendelian laws from it.

Gregor Mendel was a monk and abbot, who devoted much time to the study of heredity in plants. "Born in 1822, of Austro-Siletian parentage, he early entered the monastery of Brünn, and there, in the seclusion of the cloister garden, he carried out with the common pea the series of experiments which has since become so famous. In 1865, after eight years' work, he published the results of his experiments in the Proceedings of the Natural History Society of Brünn in a brief paper of some forty pages. But brief as it is, the importance of the results and the lucidity of the exposition will always give it a high rank among the classics of biological literature."

"For 35 years Mendel's paper remained unknown, and it was not until 1900 that it was simultaneously discovered by several distinguished botanists."

It so happened that many workers were at this time interested in the problems upon which Mendel's work threw a new light. Numerous fresh experiments were started, and the laws which he had foreshadowed were again and again confirmed. From plants the experiments were extended to animals, and, as the results obtained were even more striking than could have been anticipated, Mendel's work rapidly attained scientific notoriety, and attracted an ever growing circle of experimenters. Some of these workers, especially those at Cambridge, were interested in the agricultural

aspects of the problems, and much valuable work has been done. Hence the necessity for up-to-date agriculturists to take an intelligent interest in Mendelism. To such this book may be recommended, though we must confess that it still leaves room for a more popular and less technical explanation of Mendelism, and of the work which has been done of late years along the lines of Mendel's researches.

We will select from the book a few passages which will give some indication of the nature of the problems now being studied. If some years ago one had asked the question, Suppose you cross a tall growing variety of the common pea with a dwarf growing variety what would be the result? we may safely affirm that no one would have dared to predict what would take place. But Mendel had discovered what would happen, and had given an explanation. The author describes this work of Mendel as follows:—

> "He chose two strains of peas, one of about 6 feet in height, and another of about 1½ feet. Previous testing had shown that each strain bred true to its peculiar height. These two strains were artificially crossed with one another, and it was found to make no difference, which was used as the pollen parent and which was used as the ovule parent. In either case the result was the same. The result of crossing tall with dwarf was in every case nothing but talls, as tall or even a little taller than the tall parent. For this reason Mendel termed tallness the dominant and dwarfness the recessive character. The next stage was to collect and sow the seeds of these tall hybrids. Such seeds in the following year gave rise to a mixed generation, consisting of talls and dwarfs, but no intermediates. By raising a considerable number of such plants, Mendel was able to establish the fact that the number of talls which occurred in this generation was almost exactly three times as great as the number of dwarfs. As in the previous year, seeds were carefully collected from this, the second hybrid generation, and in every case the seeds from each individual plant were harvested separately and separately sown in the following year. By this respect for the individuality of the different plants, however closely they resembled one another, Mendel found the clue that had eluded the efforts of all his predecessors. The seeds collected from the dwarf recessives bred true, giving nothing but dwarfs. And this was true for every dwarf tested. But with the talls it was quite otherwise. Although indistinguishable in appearance, some of them bred true, while others behaved like the original tall hybrids, giving a generation consisting of talls and dwarfs in the proportion of

> three of the former to one of the latter. Counting showed that the number of the talls which gave dwarfs was double that of the talls which bred true."

Here we have the keynote to Mendelism, first the discovery or recognition of dominant and recessive characters, and, secondly, the law that when hybrids are bred from they produce always in the same proportion—1 recessive to 3 dominants. That the recessive is a pure breed, and one dominant a pure breed, while two of the dominants are hybrids, and if bred from will, like their parents, produce one recessive (pure), one dominant (pure), and two hybrids.

Mendel followed up this discovery as regards the character of tallness by testing other characters, *e.g.*, the colour of flowers, the shape of seeds, etc., and much of the work which has been done by recent workers has been to discover which characters in plants and animals are dominant, and which are recessive.

Now let us take a result of quite a different character. There is a certain variety of fowl known as the Blue Andalusian.

> "Fanciers have long recognised the difficulty of getting this variety to breed true. Of a slaty blue colour itself with darker hackles and with black lacing on the feathers of the breast it always throws 'wasters' of two kinds, viz., blacks, and whites splashed with black."

By breeding the "wasters" together—black with black, and splashed white with splashed white—it was found that each bred true to its respective type. But when the black and the splashed white were crossed they gave nothing but blues. The black and the splashed white wasters are in reality the pure breeds, while the so-called "pure" Blue Andalusian is a mongrel which no amount of selection will ever be able to fix.

Careful breeding from the blues shows that the three sorts are always produced in the same definite proportions, viz., one black, two blues, one splashed white. In other words, we have the seeming paradox of the black and the splashed white producing twice as many blues as do the blues when bred together.

Here then we have an illustration of the absence of dominant and recessive characters, so far as the black and white colour of the parents are considered, but the same relation in the offspring of the mongrels as was found with the hybrids of the plant.

These two cases serve to illustrate what may be described as the keynote of Mendelism. They are the simplest possible cases.

The problem becomes far more complex when we come to deal with two distinct characteristics, for example, form and colour in each parent.

Those who wish to study the subject further we must refer to the book itself, but we must warn our readers that the book needs study and is not one which can be lightly skimmed.

4.—*Breeding and the Mendelian Discovery.* By A. D. Darbishire. London: Cassell & Co. 7s. 6d.

This is another work dealing with the facts discovered by Mendel and with the bearing of these facts, and of the theory put forward to explain them, on the science of heredity and the practice of breeding. It is intended to serve merely as an introduction to the subject. The author says :—

> "I have given a fuller account of the Phenomena observed by Mendel than has yet appeared in popular form : the seven pairs of characters studied by him are all figured for the first time ; and other results of his are illustrated by photographs from specimens which I have bred myself."

This book, which came to us long after the preceding notice had been written, was found curiously enough to devote its second chapter to the crossing of tall with dwarf peas, and the fourth chapter to the case of the Andalusian fowl, which we have mentioned above. The third chapter deals with four other characters of the culinary pea studied by Mendel, and Chapter 5 with the characters of the seed of the culinary pea. Thus a good foundation in the general principles of Mendel's laws is laid and the information is expressed so clearly and with so little use of scientific phraseology that the ordinary reader can grasp the subject with comparative ease. Moreover, the author's description is helped by the use of excellent photographs and some plates in colours.

Passing to the subject of "throwing back, or reversion," the author takes for his illustrations the results of his own work on the crossing of the common Albino mouse with the so-called Japanese waltzing mouse, a mouse which has a curious habit thus described :—

> "The actual waltzing itself, which gives the breed its name, does not of course resemble waltzing, and is not executed on the hind legs only. A better name which is sometimes given it, is

'spinning.' The animal runs round and round in a small circle, the diameter of which is about half the length of the animal's body excluding the tail, at so great a pace that the mouse becomes a blurr. The waltzing mouse is not, however, always spinning, it spins at night as a rule, and sleeps during the day when it is not being fed."

The first object of these experiments was to determine the effect of crossing on the colour of the various hybrids produced, and a most interesting chapter gives the results of these experiments and affords to the ordinary reader a better insight into Mendelism than he will readily find elsewhere. It is perfectly easy to follow the description given by the author, its clearness being enhanced by an excellent coloured plate. Both the original mice were white and had pink eyes. The first offspring were grey with black eyes. The second generation was then studied and was found to consist of many varieties partly reverting back to the white mice with pink eyes. The account of these experiments is fascinating, but we must leave the book itself to complete the tale.

Having studied the effect of crossing on colour, the author asks the question:—

> "What is the relation between members of distinct pairs of characters, *i.e.*, characters of distinct features of the animal or plant—for instance, the colour of a mouse and its mode of progression? The answer in this case is very simple. There is no relation. The colour of a mouse and the nature of its movements, *i.e.*, whether normal or 'waltzing,' are inherited entirely independently of one another."

The few short extracts we have been able to quote give a good idea of the author's style. He has treated a most difficult subject with remarkable lucidity, and we have not read any book on the subject of Mendelism which we consider better adapted to agricultural readers.

5.—*Milk and Cream Testing.* By G. SUTHERLAND THOMSON. London: Crosby, Lockwood & Son. 4s. 6d.

There is always a striking difference between books on practical subjects written by men who have had practical experience and those compiled by men who are mere writers. One may not so fully recognise this when reading the books, but take them into the workshop to guide you in your work and the great difference between the two immediately becomes apparent. The book written by the theoretical man fails just where you require help, for it deals in generalities when you require details. The man who has been through the mill, knows that the value of all instruction lies mainly in details, and he gives these as the result of years of experience. The great value of this book lies in the fact that the author has evidently had long experience in the subjects with which he deals. We were very pleased with the title—Milk and Cream Testing (not analysis). There are many people who do not as yet realise that there is a great difference between testing and analysis. A test is a method which can be rapidly applied, gives fairly accurate results, does not require the training necessary for an analyst, and is mainly of value in checking the very large work of the factory. Analysis is more minute and exact, requires special training, and takes far more time; and the results are intended to be used more as standards than for everyday practical information. For example, suppose a cream factory is built and several varieties of cream separator are installed. After these have been running for some time and have got into working order, samples of the separated milk are taken and sent to an analyst for a precise determination of the fat to see whether the separators are working satisfactorily. At the same time tests are made in the factory by the more rapid methods employed there and such as are fully described in this book. The difference between the exact chemical analysis and the factory tests once being known, the factory can be worked with the ordinary tests until anything wrong appears to happen, when it becomes necessary to check the test by chemical analysis. We have dealt at some length on this point because the difference between the two words analysis and testing is not properly recognised.

This book deals with the testing of milk and cream. It is primarily intended for the worker in a dairy factory, and, as Mr. Samuel Lowe says in an interesting introduction: "In those

countries where the dairy industry is carried on as a manufacturing business on a large scale this volume is invaluable to every individual employed in the industry."

The system of testing adopted by the author is that known as the Babcock test. This has never become so general in England as in our colonies, mainly, we believe, because the mechanical part of the tester has never been brought to such perfection as in the more generally employed Gerber tester. But those who have had experience of both methods of testing know that the Babcock has several advantages to recommend it. It makes very little difference to those who are engaged in milk and cream testing, whether they use the Babcock or the Gerber method. This work really applies to both or any system, for it is not merely in the description of the tests that the author excels, but more especially in giving numerous valuable suggestions and details relating to Dairy work and testing generally. The third section of the book deals with the grading of dairy produce, a practice of which, unfortunately, Englishmen have too little knowledge and experience. It is largely owing to the care and skill with which our competitors grade everything they put on the English market that the keenness of their competition is due. We are too fond of assuming that we can produce the best of everything. It may be true; but what is the use of producing the best if it is only produced in very small quantities and very occasionally. Apart altogether from quality, the consumer requires a regular supply of a uniform article, and unless our dairy farmers learn to satisfy the demand of the consumer they will find their business pass entirely into the hands of competitors. We therefore earnestly recommend to the attention of those who wish to prevent such a catastrophy this very practical little book. The author has made use of the opportunity afforded by its pages to give expression to his views on many dairy problems which are attracting attention at the present day, as for example, the so-called milk standard, prosecutions for assumed adulteration, and some of the hardships from which milk vendors suffer. These lend to his book a more general interest than its limited title might lead one to expect.

6.—*Reports on Experiments.* Glasgow and West of Scotland Agricultural College. 1s. 6d.

This is the tenth Report which has been issued by the West of Scotland Agricultural College. Several of the former Reports have been noticed in past volumes of the Journal, for they have been worthy the attention of agriculturists outside Scotland almost as much as those of Scotland, to whom the results obtained naturally have a special interest and value. The importance of this tenth report is not less than of those which have preceded it. The contents consist of ten separate reports, which have previously been issued as bulletins, and the subjects covered are various. The manuring experiments on poor permanent pasture, potatoes and turnips, and those on the cultivation of Lucerne, on the application of lime, and on the prevention of finger and toe in turnips, will appeal to all farmers, while others on starters in dairying and the feeding of pigs will especially interest dairy farmers. Teachers will study with profit a Report on the teaching of gardening in public elementary schools, and the formation of school gardens.

The cheapness of the Report puts it within the reach of all, and even those who are interested in only one of the subjects will find it worth its modest price. It will be impossible in a short notice to draw attention to even a fraction of the results obtained in these experiments. The very first Report on the improvement of hill pasture shows how greatly the results of experiments, when they have reference to the action of manures, depend upon local conditions of soil and weather.

In summarising the results of these experiments Mr. James Hendrick says :—

> "The great and rapid improvement which was effected by phosphatic manures, and especially by basic slag, on the plots at Cockle Park, has not been obtained on any of the plots in Scotland.
>
> "An improvement was effected by all the manures, but of the manures used it is only basic slag which has in general effected sufficient improvement to make the application remunerative. . . . Even in the case of Basic Slag, on the average three or four years elapsed before sufficient return was obtained to pay for the slag."

Readers of the Journal know how different were the results obtained in the Bath and West Society's experiments in the West

of England, which were reported on in the last Journal. It is curious also to note that :—

> "The feeding of cake gave the worst return of all for the expenditure. So far as the experiments show, very little result is recoverable from the manure value of cake on these soils."

The results obtained in the experiments on the manuring of potatoes show :—

> "That larger and more profitable crops can be grown by small dressings of farmyard manure with the addition of a suitable mixture of artificials than with large dressings of farmyard manure alone, and that the most successful and profitable mixture of artificials employed in the experiments, and applied in addition to ten tons of farmyard manure per acre, consisted of :—
>
> 3 cwts. Superphosphate (30 per cent. soluble)
> 3 ,, Basic Slag (30 per cent. citric soluble)
> 1½ ,, Sulphate of Potash (94 per cent. purity)
> 1½ ,, Sulphate of Ammonia

In this series of experiments the new nitrogenous manures were also tried with the result that both cyanamide of calcium and nitrolim have given results almost equal to sulphate of ammonia.

In an interesting report on the cultivation of lucerne, which, like the last two reports mentioned, is written by Professor (now Sir) R. Patrick Wright, then Principal of the College, much information is given which may be of more interest to those living and farming in England than to those in Scotland, where hitherto lucerne has been but little cultivated. One interesting fact brought out in this Report, the importance of which cannot be too strongly insisted upon, refers to the effect of inoculation on the subsequent crops. After showing that this inoculation was advantageous, the reporter says :—

> "It is quite obvious that while the inoculation sufficed to enable the plants to supply themselves with abundant nitrogen from the atmosphere, they were no longer able to gather in the soil, exhausted by repeated removal of the crop, the minerals required for their full growth, and that the maintenance of the yield from this plot at a high level would be dependent on the supply to it of an adequate quantity of Phosphates and Potash. Hence apparently the reason for the comparatively large fall in the yield in 1907, following the heavy crop of 1906."

A Report on seven experiments on the feeding of pigs at Kilmarnock, which is contributed by Mr. Wm. Stevenson, contains much valuable information. It will interest our readers to know that :—

> "Whey, with a mixture of equal parts of barley meal and maize meal, gave the best results of the three meal mixtures experimented with, both in live weight increase and in the balance remaining after paying for the food consumed. And the ration which gave the best results consisted of one part barley meal, one part maize meal, and eighteen parts whey, by weight. The average rate of increase in live weight from this ration was 1·56 lbs. per head per day."

We have given sufficient extracts from the numerous conclusions to which some of these experiments have led to show the practical nature of the work done ; work on which the College authorities and all who have helped in carrying out the experiments must be congratulated.

7.—*Woburn Experimental Fruit Farm, 13th Report.* By THE DUKE OF BEDFORD and S. U. PICKERING. London: The Amalgamated Press. 4s. 9d.

To anyone fond of agricultural experiments or who takes even a slight interest in the methods of discovery adopted by scientific men, the Report of the experiments carried out at the Woburn Experimental Fruit Farm must be attractive reading. Certain facts ascertained by experience are first carefully stated, then the various theories which are put forward to account for these facts are mentioned, and, finally, we are told how these theories are put to the test of actual experiments and what were the results obtained. Students who desire to become investigators in any branch of scientific work may read this Report with advantage. So clearly is it written, so logical are its arguments, so varied and practical the experiments which are conducted to test these arguments, that it is really an admirable guide to a young scientific experimenter whether he is interested in agricultural and horticultural matters or not.

It had been noticed that if trees were grown, some on land tilled and kept tilled, and others on land upon which grass was allowed to grow, the trees surrounded by grass were always inferior to those on the tilled land. Such was the observation which led to the

inquiry, why is this? Experiments were started to see if this effect was general. As the result of these the authors say:—

> "No single case has occurred at the farm wherein grass has not shown a strong detrimental effect on the growth of the trees, and this statement applies equally to experiments with trees planted out in the ground, and to those used in the pot experiments."

This led to a long series of experiments. The object of the first experiments was to discover what was the exact effect of this grass upon fruit trees. It was then found that "the effect of grass on the deeper rooting standard trees is very nearly as great as on dwarf trees on surface rooting stocks."

Naturally these facts have a very important economic bearing upon our present day customs. As the authors truly say:—

> "The effect of grassing established orchards undoubtedly, also, varies considerably in different soils, and whilst in some cases the effect may be small, in others it is disastrous: in any case it is a risky procedure, and the abandonment of such a practice in the large fruit-growing districts of America is in itself a strong argument against it." "Farm orchards, of course, are nearly always in grass, and from an æsthetic point of view it is to be hoped that they may remain so, but the trees in them are generally but the hardier survivors out of a multitude, and are rarely in such a condition as would be satisfactory to a fruit grower."

Of the many results obtained in these experiments, which have now been carried on for many years, we can only note a few, and must refer our readers to the Report for further details.

Why does grass have the effect above stated. The question was asked, Does it interfere with the root growth? In reply thereto experiments showed that the roots—

> "do not seem to seek greater depths, in order to get down below the grass-roots; the trees in grass are quite as much surface rooted as those in tilled soil, perhaps even more so."

Yet the grass does affect the roots to a certain extent by reducing both the number and weight of the rootlets.

> "So that although the grass does act by restricting the number of new roots formed, it seems to act still more energetically by preventing the development of those which start into growth."

It is a curious fact that "the effect of grass in orchards is greatly reduced where the grassing is allowed to take place gradually."

But even then there is a detrimental effect, thus :—

> "The weight of the trees from the plots on which grass had been sown immediately after the planting was only 9 per cent. of that of the trees in tilled soil, whereas in the plots where the grass had been allowed to establish itself gradually, the weight was 30 per cent.; in other words, the latter trees were over three times as large as the former, though still only one-third of the size of those in cultivated ground." But "when the grass establishes itself only gradually during the course of several years, the trees have the power of accommodating themselves to the altering conditions."

Having briefly indicated some of the facts, we may now turn to the Introduction of the Report in order to ascertain the position taken up by the investigators. They say :—

> "The general conclusion to which former results led, and which has now been greatly strengthened, if not proved, by recent work, was that the action of grass was due to the existence of some substance which was actively inimical to the growth of the trees, though how such substance originated was a matter of conjecture. It might be that the grass so altered the chemical composition, or perhaps, even the physical condition, of the soil, that this latter was no longer capable of supplying the tree with the nourishment required by it; the débris of the grass in its decomposition might produce some actual poison, or the grass roots, in accordance with views held by the workers in the Bureau of Soils in the United States, might excrete some substance which was toxic to the trees; or, again, it might be a question of soil-bacteria, certain bacteria being necessary for the growth of trees, and the bacterial flora being modified by the growing grass in a manner detrimental to them.
>
> "Whatever the explanation might be, the whole question was evidently one which is intimately connected with a fundamental and little understood problem in soil-management, namely, the effect of one crop in fitting or unfitting the soil for the growth of other crops, by bringing about changes in it, of which no simple chemical explanation can yet be given."

How all these theories were put to the test of experiment the Report fully details, and it is interesting to find that in the end the authors consider that "strong evidence of a positive character as to the formation of a toxic substance during the growth of grass was finally obtained."

8.—*Manures for Garden and Farm Crops.* By W. DYKE. London: W. H. & L. Collingridge. 1s.

In introducing this book to the reader the Editor says:—

"To enable the cultivators of ordinary and market garden crops, as well as the small holder who grows root, forage, and cereal crops, to clearly understand the nature and composition of all kinds of manures and fertilisers, their adaptability to various soils, and the correct methods of application thereto, we have decided to issue the present Handbook for the express purpose of supplying such information in a simple manner, and as free from scientific language as is compatible with lucidity and accuracy. The volume is essentially one for the practical man, and not for the advanced student who is seeking after the scientific side of the subject of manures and fertilisers."

Such is the object of this little work, and we may say at once that most admirably has it been carried out.

As an illustration of the treatment of the scientific side of the subject of manuring, we may quote the following passages which for simplicity and yet accuracy leave little if anything to be desired.

"Chemists by analysing plants can tell what substances are found in them. Thousands of different varieties of plants have been analysed, and it has been found that all of them contain in varying proportions the following substances:—Carbon, hydrogen, Oxygen, nitrogen, phosphoric acid, sulphuric acid, potash, lime, magnesia, and iron. Experiments have proved, beyond the shadow of doubt, that no plant will grow and flourish unless it has a supply of these ten substances. They are known as the essential elements.

"Plant physiologists have carried the work a stage further, and have found that it is possible to produce fully-developed, healthy plants by growing them in pure water or on sand, and adding small quantities of chemical substances containing only seven of the ten essential elements of nutrition. When carrying out these tests it was found that if any one of the seven was left out, the plant refused to grow. Very early it was found that there was no need to give carbon, as the leaves obtained this from the atmosphere. The water in which the roots were placed, or that given to the plants grown in sand, is composed of hydrogen and oxygen, and as they had command of so much of these two elements it was unnecessary to consider them.

Seeing that the chemist can find out exactly of what material crops are composed, and that physiologists can grow perfectly healthy, fully-developed plants, by feeding them from the seedling stage with seven of the essential elements, let us see what bearing this has upon our subject. Reasoning from these facts, soils and manures ought, when subjected to the same analytical tests, to show that they contain all or some of the elements of plant food. The following table shows the partial analysis of 100 lbs. of tomato plant, dung, and fertile soil, and proves that the same substances are present in both dung and soil as are found in the plant."

100 lbs. of Tomato Plant contain	100 lbs. Dung contain	100 lbs. Fertile Soil contain
2 ozs. of Nitrogen ...	5 ozs. of Nitrogen ...	3 ozs. of Nitrogen
4 ozs. Potash ...	5 ozs. Potash ..	5 ozs. Potash
1¾ ozs. Phos. Acid ...	3 ozs Phos. Acid ...	1½ ozs. Phos. Acid
2 ozs. Lime ...	8 ozs. Lime ...	32 ozs. Lime
¾ oz. Iron	Traces of Iron . .	48 ozs. of Iron
⅛ oz Magnesia ...	Traces of Magnesia ...	5 ozs. of Magnesia
½ oz. Sulphuric Acid...	Traces of Sulp. Acid	1½ ozs Sulp. Acid

Starting with these preliminary facts, the author considers in order first the structure and function of plant tissues, and then the food of plants, in which latter chapter he explains more fully how the plant obtains its carbon from the atmospherê and the nature of the other constituents of plants previously mentioned. In the next chapter soils and their use are considered, and as may be expected from an author who has first and foremost in his mind the use of the soil for gardening purposes, he lays more stress upon humus than is generally done in works on manures, which, as he truly says, hitherto "have been written by scientists." How does the practical author of this work view this subject. He says :—

"Humus, from its origin—that is, being composed for the most part of decaying vegetation—must be one of the chief factors in forming a fertile soil. The humus is full of the elements of the food, that was absorbed from the air and soil by the plants which are now decaying. As this decomposition goes on, nitrogen in the form of ammonia is liberated, together with varying quantities of potash, phosphates, magnesia, and lime. When soil is mixed for pot plants, care is always taken to get a plentiful supply of humus-forming material in the mixture, by the addition of decayed dung and leaf mould. It is just as essential to see that a fair proportion is built up in the open soil, for the more humus a soil contains (up to 10 per

cent.) the more fertile the land and the larger the crops, providing always that some form of lime is added to keep the soil sweet."

We now pass to the second part of the book, and this treats of manures of every description. This section is well up to date, and such new materials as nitrate of lime and nitrolim (Calcium Cyanamide) are included. In this part Mr. Dyke makes a curious distinction; he applies the term manures to all the general and phosphatic compounds employed, but all other substances, such as Potash salts, and lime in its various forms, are spoken of as fertilisers. We may take as a typical example of his treatment of these substances the following paragraph on Gas-Lime :—

> "Gas-lime under certain conditions may be a useful source of lime to apply to soils. When obtained fresh from the gas-works it is a mixture of caustic lime, carbonate of lime, sulphide and sulphite of lime. Both sulphide and sulphite of lime are deadly poisons to all kinds of plants, and must never be applied to growing crops, fruit trees, or land which is soon to be cropped. By exposure to the atmosphere both these forms change into sulphate of lime, or gypsum, and then gas-lime is beneficial. On account of the harmful properties of gas lime it should only be used for vegetable land, and applied as early in the autumn as possible, spreading it evenly over the land, and allowing it to lie exposed during the whole of the winter months. In this way, land tainted with insect or fungoid pests, or even the seeds and seedlings of weeds, may be cleared of them by a judicious use of this substance. One pound per square yard, 28 lbs. per square rod, 2 tons per acre, is the most that should be used."

In Part 3, formulæ are given for the manuring of various crops, and it is to this part that readers will probably turn more frequently than to any other. We have consulted it here and there for information on specific subjects in which we were interested and have found the information concise, practical, and useful. We have on former occasions felt able to give a word of praise to the "Farm and Garden Handbooks," issued by the same firm and edited by Mr. T. W. Sanders, and this on "Manures" is certainly one of the best of the series.

9.—*The Profitable Culture of Vegetables.* By Thos. Smith, F.R.H.S. London: Longmans, Green & Co. 6s.

At the present day when there is so much talk about the value of small holdings, it is quite an exception to come across any writer who in a straightforward manner puts before the would-be small-holder all the difficulties which beset his path to success. We were therefore agreeably surprised that the author of this work, which is not only intended but eminently suitable for small-holders, should have boldly sounded a word of warning to those enthusiasts who might be tempted to enter on market gardening without first counting the cost. These words of warning are in our opinion so valuable that we venture to quote them in the main. The author says:—

"The ultimate success of the man who undertakes market gardening as a means of obtaining a livelihood largely depends upon his fitness for the work. It is an occupation which calls for judgment, foresight, resourcefulness, untiring industry and unfailing optimism. If he is endowed with these qualities his prospects of success will then depend upon his aims, a thorough understanding of the manner in which he intends to realise them, and the means at his command.

"Before embarking upon the serious business of cultivating the soil for a living, a man ought to have in hand not only enough capital to provide for rent, tools and appliances, manure, seeds and live-stock, but also sufficient for his family's maintenance for at least one year. Although the average returns from well-cultivated land may be calculated with a near approach to accuracy when taken over a sufficient number of years, the returns in any given year are very uncertain because of irregular climatic conditions. If the holding is a newly formed one the first year's occupation of it is sure to be beset with innumerable unforeseen items of expense.

"In addition there is always the possibility that the first season may be an exceptionally cold or wet one, with the returns from crops much lower than was calculated upon, and if this should be the case disaster will not be far away unless there is some reserve fund to fall back upon. Even if success is attained in the end, lack of sufficient capital must entail much unnecessary privation and toil in the early years.

"Few men have any conception of the labour required to make a small holding successful. Given a strong constitution

the work is healthful and adds to length of years, besides being pleasant enough when one's mind and body have become accustomed to it; but it is never other than laborious. No one should undertake to cultivate the soil for a living for the first time after middle age, and at no time is the work suitable for men of poor physique. The long hours of labour and the exposure necessary to success—for many of the operations, such as summer planting, are best done during rain—must tell heavily against a feeble constitution.

"It must therefore suffice to utter a grave warning to those who contemplate such an undertaking that it should not be entered upon without the fullest and most careful consideration."

Notwithstanding this warning it is evident that the author is fully convinced that no effort should be spared to bring men back to the land, or at least to prevent them from ever leaving the cultivation of the soil for the dreary life of the town. In his introductory remarks he says :—

"All history proves that a nation's well-being depends not upon its industrial and intellectual pursuits only, but upon a judicious combination of these with agriculture, and that the neglect to cultivate its own land has always been the prelude to a nation's downfall.

"The cultivation of the soil is beset with trials even for those who have made it their life's business, and it is obviously much more difficult for a person with little or no experience. The most carefully laid plans may be made abortive by the vagaries of the weather. Insect pests are always at hand to take a heavy toll of the crop unless persistently battled with, and fungoid diseases are ever lurking near, ready to attack any crop subjected to unsuitable conditions.

"Difficulties become manageable when faced with resolution and with knowledge. Success is always the ultimate outcome of sound work when the end in view is understood and details are properly attended to. Spasmodic effort or uncertainty both lead to failure.

"Gardening is always more or less intensive culture, and differs mainly from extensive farming in that it adds to such culture numerous small but highly important details, to omit or neglect any of which frequently means loss or failure. The purpose of this book is to supply the knowledge necessary in one branch of agriculture—the culture of vegetables for profit."

Having first described the soil and its treatment, and then manures and their use, the author passes to the consideration of those important subjects, the selection of a small holding, and how to lay it out, cultivate, and crop it. Next come chapters on that modern system of vegetable culture, known as French Gardening, followed by an account of the older methods of hot beds and frames. The sowing of seeds, thinning out, transplanting, and all the general and fundamental processes of cultivation, or, as the author names them, the essentials of successful gardening, are then brought under review.

In the second part of this exhaustive work all the details of the cultivation of vegetables is given, these vegetables being taken alphabetically from artichoke to vegetable marrow. And we note that even those which are not much cultivated in this country, such as Cardoons, but which are well known to travellers abroad, are also included, while specially detailed attention is given to such crops as strawberries, tomatoes, etc. A "monthly reminder" is followed by a most important chapter on grading, packing, and marketing. As the author very justly says :—

> "The work of the market gardener is by no means finished with the harvesting of the crops he has grown. The motive behind all his operations is to obtain a reasonable return in net profit on the skill, labour, and capital expended. In order to secure such a return his produce must be sold at remunerative prices, and the knowledge of how to go to work to get such prices is quite as important as the ability to raise the crops."

Finally, the various insect pests and the diseases of plants are thoroughly dealt with. The work is very well printed and fully illustrated, many of the illustrations having been provided by Messrs. Vilmorin-Andrieux, of Paris, and Messrs. Sutton & Sons, of Reading. There is an extensive index, and evidently publisher and author have spared no pains to produce a handsome, reliable, and practical guide to the cultivation of vegetables.

10.—*Dairy Cattle and Milk Production.* By C. H. Eckles. London: Macmillan & Co., Ltd. 7s.

If an Englishman were to write a book on the above subject we may be quite sure that he would start with a description of the Shorthorn. This book, however, is written by an American, and "presents in printed form matter that has been gathered by the author during the past ten years for presentation to students in the form of lectures." The author is Professor of Dairy Husbandry at the University of Missouri, hence one may be certain that he has good ground for the classification of dairy cattle which he adopts in this work. The following is the order in which he places the cattle common in America.

Dairy Breeds.—Holstein, Ayrshire, Jersey, Guernsey, Dutch-belted, Brown Swiss.

Dual-purpose.—Shorthorn, Red Polls, Polled Durham, and Devon.

Beef.—Shorthorn, Hereford, Aberdeen-Angus and Galloway.

In addition to the above, small numbers of French-Canadian, Kerry, and Polled Jersey cattle, all to be classed as dairy breeds, are found in certain localities in America."

Thus the Holstein comes first, and those who have read Mr. Evans' paper on page 36 of this *Journal* will not be altogether surprised. From the Holstein to the Jersey is, however, a big jump, and we in England are so accustomed to regard the Jersey as merely a butter cow that one is surprised at the position it takes in America and not unnaturally looks for some explanation. The following passage supplies that explanation:—

"The Jersey is the smallest of the Dairy breeds with the exception of the Kerry. The weight of the average cow is generally between 800 and 900 lbs. The bulls, as a rule, range from 1,200 to 1,700 pounds. The breeders in America have generally favoured the larger animals, and for this reason, and possibly also on account of the more liberal feeding practiced, it is generally believed the breed tends to gradually increase in size after a few generations in America. Cows weighing 1,000 lbs. are quite common here, but unknown on the Jersey Island. Recently, on account of the numerous importations and the wide use of bulls of a smaller type from the island, the tendency for the average size of the breed to increase is checked temporarily at least.

"The difference is so marked between the imported or their near descendants, and those descended from the early importations, that two types are generally recognised, the American and the Island types. The American type is well represented by animals of the St. Lambert breeding. This type is larger and coarser than the Island type, and less beautiful. This type is often deficient in fore udder development, is inclined to coarseness in the head and pelvic region, and is often lacking in general symmetry. Cows of the American type hold most of the best milk and butter records of the breed at present."

Here then we have evidence that the Jersey in America, is quite different from the Jersey as we know her, and this is confirmed by the following statement:—

"The Island type is small and delicate looking, beautiful in form, and with splendidly developed udders, especially in front. They have fine, symmetrical heads and necks, and level, flat rumps. This type has been the favourite in recent years in show ring competitions, and includes the most fashionable breeding and highest priced animals of the breed at present."

As an illustration of the great difference between these two varieties of the Jersey the following figures, taken from this chapter, may also be of interest. As regards the pure bred animals we have the following:—

"Reports of American experiment stations up to date show the following facts regarding the yield and composition of milk produced by pure-bred Jerseys in the herds belonging to these institutions:—

	Average.	No. of Cows Represented
Pounds milk per year	5,508 ...	153
Per cent. fat	5·14 ...	154
Yield fat per year (lbs.)	283 ...	153

In comparison with this we have the following figures which appear to refer to the American type of Jersey. The author says:—

"The following are the ten highest yearly records up to the present for the Jersey breed:—

	Lbs. Milk.	Lbs. Fat.
Jacoba Irene	17,253 ...	952
Sophie 19th of Hood Farm ...	14,373 ...	855
Adelaide of Beechlands	15,572 ...	849
Rosaire's Olga 4th Pride ...	14,104 ...	836
Financial Countess	13,248 ...	795
Molle of Edgewood	14,036 ...	705

	Lbs. Milk.	Lbs. Fat.
Lass 30th of Hood Farm ...	11,990 ...	685
Bessie Bates	13,895 ...	680
Olive Dunn	9,930 ...	671
Peers Surprise	14,452 ...	653

In a most thorough manner the writer deals with each and every breed of dairy cattle.

The next portion of the book is devoted to what we may term the building up of a dairy herd. Chapters deal with "Starting a Dairy Herd," "Selection of the Individual Cow," and then on "How Individual Selection is made." This latter contains an admirable description of how milk records should be kept. It is rather curious to note that while the value of a daily record is recognised, and appears to be to the mind of the author the only real method, he also refers to monthly records, but entirely omits to speak of weekly tests. His introductory remarks upon the keeping of milk records are, however, so valuable, and yet so concise, that we venture to quote them :—

"The only plan of keeping milk records which is entirely satisfactory is that of keeping complete daily records of each individual animal. This appears to be a very large undertaking to the dairyman who has never followed such a plan, but it does not require as much work as is usually anticipated, and the advantages which follow are sufficient to justify the expense and labour required. A pair of spring balances should be provided, and hung at a point convenient for the milkers, and a suitable milk sheet placed on the wall beside the scales. One of the advantages of keeping complete daily records of milk production is that it makes possible the feeding of the individual cows with the greatest economy. It is impossible to feed economically unless the amount of milk produced by the individual is taken into account; and unless a daily record is at hand, there is no basis upon which to estimate the amount of feed each individual requires. Daily records also enable the herdsman to detect sickness quicker than would otherwise be the case. If there is a noticeable decline in the amount of milk produced, with no apparent cause, it is certain the animal is not in the right condition and will probably show a more marked case of sickness very soon, if not properly treated. When such a sudden decline occurs, the herdsman, by adjusting the ration and giving the cow some special attention, will be able in many cases to prevent the development of what might be a serious case of sickness.

"Again, daily weighing makes it possible to judge of the work done by different milkers. It is a well-known fact that some milkers are able to secure much more milk from the same cows than are others. This difference may be as much as 25 per cent. or even more. Especially where there are several milkers for the same herd, it is impossible to form a fair estimate of their work unless each man milks the same animals regularly and each lot of milk is weighed and recorded.

"Without records certain cows often become favourites of the milkers for some reason, either on account of the disposition of the animal or the easy milking; and these favourites are held to be the best cows of the milker; and often the truth regarding their value cannot be told except from the records. It is the experience of all who have adopted the plan that the advantages above enumerated more than pay for the extra time required. The greatest advantage, of course, is making it possible to know the profitable cow and dispose of the inferior animals."

It would not be fair to make further extracts from this altogether admirable book. We may say that so far we have only dealt with the first half of it. The remainder treats, among other subjects, of calf raising, the management of dairy cattle, feeding for milk production, stables, etc., etc. Our readers will have been able to form their conclusions already as to the character of this very practical work, which contains evidently the ripe experience of an undoubted authority on the subject of Dairy Cattle.

11.—*The Feeding of Crops and Stock.* By A. D. HALL. London: John Murray. 5s.

For many years two books, entitled "How Crops Feed" and "How Crops Grow," were prime favourites amongst the reading agricultural world. These books may have been brought up to date and be still on the market, but we have not seen them for some years past, and during that time many new discoveries have been made. The first half of Mr. Hall's book covers very much the same ground as was taken up by those older favourites, embodying, however, these newer discoveries. The author starts with an account of

what takes place during the germination of a seed and what are the conditions necessary for its germination, and then continues :—

> "Having thus considered the factors that determine the germination of seeds, we are in a position to consider the application of them to practice. In the first place, the seed must be alive; it must not have begun to sprout and then been dried off again; it must not have been overheated in the stack or harvested prematurely before the embryo had come to its full term; it should not be so old as to have declined in its vitality. It is easy to make a germination test of the common farm or garden seeds; select a soft tile, and with a file score ten parallel grooves across it, then ten more crossing them at right angles, thus giving rise to 100 points of intersection. Stand the tile in a dish of water so that the scored surface is above the water, but is kept damp by the porous nature of the tile, and set out 100 of the seeds taken at random, one on each intersection. Cover over with a plate or dish, set it in a warm place and examine every day, counting the number that have started, and removing them. A saucer of fine sand, or even three or four thicknesses of blotting paper will do as well as the tile, though the water supply may require a little more attention. Most farm seeds will have germinated in ten days, but mangolds require a fortnight, and the majority of grass seeds three weeks. If the records are properly kept, a table is finally obtained which shows both the percentage which eventually germinate, and the rapidity with which they start. With a good young vigorous sample, most of the seeds start within a day or two of one another and comparatively early.
>
> "Given good seed, it is of no use to sow it until the year is advanced enough to ensure sufficient warmth in the soil, or without a proper preparation of the land.
>
> "The great art of the farmer—the prime act of husbandry, in fact—lies in the preparation of a proper seed bed, and its character may in most cases be summarised in two words: fine and firm. It must be fine, to ensure that all the seed can be put in at the proper depth, because there is a proper depth for each seed depending on its size; it must be firm, to keep the seed and the infant plants properly supplied with moisture.
>
> "As soon as the young root has got anchored in the soil, and the young shoot has spread its leaves into the air, the function of the seed is over and the plant begins its independent existence."

O

The plant now lives by means of its leaves and roots, the former taking food from the atmosphere and the latter from the soil. The next two chapters are therefore devoted to "The work of the leaf," and "The work of the roots." The plant having obtained its nutriment certain changes take place within it to which the term metabolic changes has been given. These form the subject of the next chapter; they are treated lightly, and only in such a manner as might be interesting and intelligible to a non-scientific man. The larger section of the book is now given up to the consideration of the soil as a source from whence the plant obtains its food. One would have expected the author to then pass to the manures employed to add to the soil those constituents which the crops have taken or will take from it, but for some reason these are left to the latter portion of the book and meantime the foods of cattle are considered, and how these foods are utilised. At the end of the book there is a short chapter on milk, butter and cheese.

Bath and West and Southern Counties Society.

CARDIFF MEETING, 1911.

JUDGES.

HORSES.

Agricultural.—THOS. EWART, Dunsmore Farm, Rugby.

Colliery.—D. REES, Bryn Beden, Tylorstown.

Hunters.—G. GORDON, The Barn House, Sherborne.

Hackneys.—T. M. BENTLEY, Skerne Road, Driffield, Yorks.

Ponies.—J. HILL, Marsh Brook House, Church Stretton.

Harness.—T. M. BENTLEY, Skerne Road, Driffield, Yorks.

Jumping.—G. GORDON, The Barn House, Sherborne.

CATTLE.

Devon.—W. TUCKETT, Stockleigh, Pomeroy, Crediton.

South Devon.—W. H. PAIN, High House, Kingsbridge.

Shorthorn.—R. W. HOBBS, Kelmscott, Lechlade.

Hereford.—H. W. TAYLOR, Showle Court, Ledbury.

Sussex.—A. STANFORD, Old Lock, Partridge Green, Sussex.

Aberdeen-Angus.—P. M. MITCHELL, Home Farm, Powis Castle, Welshpool.

Welsh Black.—W. JONES, Plas-y-bryn, Llanbedr, Merioneth.

Jersey.—HON. A. E. PARKER, Norton Curlieu, Warwick.

Guernsey.—J. D. TOOGOOD PARSONS, Manor View, Rusthall, Tunbridge Wells.

Kerry and Dexter.—H. D. D. BETTERIDGE, Drayton, Woodstock Road, Summertown, Oxford.

SHEEP.

Cotswold.—T. S. TAYLER, Idstone, Shrivenham, Berks.

Devon Longwoolled.—J. G. PEDLER, Sampford Peverell, Tiverton, Devon.

Kent or Romney Marsh.—H. M. COBB, Higham, Rochester.

Southdown.—JAS. TOOP, Bosham, Chichester.

SHEEP—*continued.*

Hampshire Down.—C. COLES, Manor House, Winterbourne Stoke, Salisbury.

Shropshire.—A. S. BERRY, Shenstone Hall, Lichfield.

Oxford Down.—W. D. LITTLE, Middleton Stoney, Cirencester.

Dorset Down.—T. C. SAUNDERS, Charminster, Dorchester, Dorset.

Exmoor Horn.—D. N. PURCHASE, Bowchurch, Molland, N. Devon.

Mountain, Ryeland and Any Breed.—D. PRICE, St. John's Mount, Brecon.

PIGS.

Berkshire.—R. B. VINCENT, Compton Valence, Dorchester.

Large Black.—H. J. Kingwell, Great Aish, South Brent, Devon.

Large and Middle White, and Tamworth.—A. S. GIBSON, Oldham House, Elm, Wisbech.

Any Breed.—J. M. HARRIS, Chilvester Lodge, Calne, Wilts.

POULTRY.

G. DOBLE, Bridgwater (Classes 1 to 27 and 56 to 71).

JOHN FRAYN, St. Stephen's, Launceston, Cornwall (Classes 1, 28 to 55, and 56 to 71).

PRODUCE.

Cider.—J. H. WOOTTON, Byford, Hereford.

Cheese.—W. CARY, Shepton Mallet.

Cream Cheese, Butter and Cream.—Prof. T. CARROLL, 1, Rostrevor Terrace, Rathgar, Dublin.

COMPETITIONS.

Butter-Making.—Prof. T. CARROLL, 1, Rostrevor Terrace, Rathgar, Dublin; and B. READ, Cam, Dursley, Gloucestershire.

Milking.—W. J. H. PORTER, Glendale Farm, Wedmore, Somerset.

Shoeing.—F. BAZLEY, M.R.C.V.S., 5, Estcourt Street, Devizes, Wilts.

Timbering and Splicing.—REES LLEWELLYN, Bwllfa House, Aberdare.

FORESTRY.

G. MARSHALL, Estate Office, Godalming.

PRIZE AWARDS, 1911.

*** An animal designated in this list as the "reserve number" is entitled, *conditionally*, to succeed to any prize that may become vacant in its class by reason of the animal placed above it by the Judges failing afterwards to qualify.

† Animals, where not otherwise stated, may be considered to have been bred by the Exhibitor.

ABBREVIATIONS EXPLAINED :—S., sire : d., dam ; s. d., sire of dam ; y., year: m., month ; w., week., d., day ; R., Reserve ; V.H.C., Very Highly Commended ; H.C., Highly Commended ; C., Commended.

HORSES.

SHIRE.

(Registered or eligible for registration in the Shire Horse Society's Stud Book).

CLASS 1.—*Shire Stallion, foaled before* 1909. [3 entries.]

I. (£15.) -F. E. MUNTZ, Umberslade, Hockley Heath, Warwickshire, black, **Danesfield Stonewall** (23214), foaled 1904, bred by R. W. Hudson, Danesfield, Great Marlow : s Hendre Hydrometer (18082), d Desford Stewardess (31723 Vol. xxii. and xxiv.), s d Stonewall (15375).

II. (£10.)—CARDIFF AND DISTRICT CART HORSE CO., LTD., 5, High Street, Cardiff, bay, **Bayham Emperor** (25903), foaled 1907), bred by the Marquis Camden, Bayham Abbey, Lamberhurst, Kent ; s Westby Regent (22917), d Rolleston Waif (46120), s d Bodenham King (17177).

CLASS 2.—*Shire Stallion, foaled in* 1909. [7 entries.]

I. (£15.)—W. AND H. WHITLEY, Primley Farm, Paignton, bay, **Primley Bellivor** (28679), bred by T. H. B. Freshney, South Somercotes, Louth, Lincs. ; s Tatton Dray King (23777), d Clapton Bonny (47487), s d Heckington Thumper 2nd (16174).

II. (£10.)—H. OAKLEY, Dewstow, near Newport, Mon., bay, **Maesglas Emperor**, bred by M. T. Williams, Maesglas, Newport, Mon. ; s Gaer Conqueror (25218), d Dewstow Flora (21651), s d Wellington Wolseley 3rd (17083).

III. (£3.)—T. THOMAS, Cwmanbach, Carmarthen, bay, **Cwman Premier** : s Markeaton Ready Reckoner (20697), d Tytherington Lady Wynn (40453), s d Ercall Wynn (13949).

R.—P. COATS, Sheepcote, Clifford, Herefordshire, bay, **Clifford Masher** ; s Tatton Dray King (23777), d Nocks Madam (26748), s d Calwick Heirloom.

CLASS 3.—*Shire Colt, foaled in* 1910. [5 entries.]

I. (£15.)—W. AND H. WHITLEY, Primley Farm, Paignton, bay, **Primley Champion** (Vol. xxxiii.); s Tatton Dray King (23777), d Mollington Movement (48793), s d Lockinge Forest King (18867).

II. (£10.)—P. COATS, Sheepcote, Clifford, Herefordshire, bay, **Clifford Bruce**; s Dunsmore Professor (25164), d Norman Emerald (48894), s d Royal Bendigo (19085).

III. (Bronze Medal).—H. OAKLEY, Dewstow, near Newport, Mon., brown, **Dewstow Friar**, bred by T. Horn, Rowington; s Friar John (24266), d Bardon Sweet Mary (25276), s d Calwich Heirloom (14547).

R.—W. THOMAS, Eglwysnunyd, Port Talbot, Glam., chestnut, **Eglwys Forest King**, bred by W. Pimlott, Newgrange, Meerbrook, near Leek; s Redlynch Forest King (23626), d New Grange Darling (39751), s d Rokeby Friar (14827).

CLASS 4.—*Shire Mare in-Foal or with Foal at foot.* [2 entries.]

I. (£15.) and Special*—W. AND H. WHITLEY, Primley Farm, Paignton, bay, **Mollington Movement** (48793), foaled 1904, bred by C. E. Bruce Fry, Mollington, Banbury, Oxon; s Lockinge Forest King (18867), d Catthorpe Malmaison (16389), s d Cronton Magna Charta (9165); with foal by Tatton Dray King.

II. (Silver Medal) and **R.** for Special*—F. E. MUNTZ, Umberslade, Hockley Heath, Warwickshire, bay, **Alston Bluebell** (43946), foaled 1903, bred by the Executors of the late J. Mercer, Alston Hall, Preston; s Alston Hero 2nd (18473), d Westby Countess (30409) Vol. xxii.), s d Cotgrave Harold (16077); in foal.

CLASS 5.—*Shire Filly or Gelding, foaled in* 1910. [7 entries.]

I. (£10.)—W. AND H. WHITLEY, Primley Farm, Paignton, brown filly, **Primley Carnation** (Vol. xxxiii.), bred by A. Denniff, Dore Hall Farm, Dore, near Sheffield; s Tatton Dray King (23777), d Tatton Nell Gwynne (43534), s d Markeaton Royal Harold (15225).

II. (£5.)—F. O. BOMFORD, Chirkenhill, Leigh Linton, near Malvern, brown filly, **Dunsmore Baroness**, bred by T. Ewart, Home Farm, Dunsmore, near Rugby: s Lowesby Baron, d Dunsmore Venus, s d Dunsmore Jameson.

III. (£3.)—C. HART, Ash Farm, Minworth, Birmingham, black filly, **Tyburn May Queen**; s Dunsmore Premier (25160), d Whitefoot (55702), s d Hecla (14084).

R.—L. H. ARTHUR, Redwick House, Magor, dark brown filly, **Redwick Princess**; s Dewstow Rex, d Hendre Lady Graduate (36147), s d Gownsman (14648).

* Given by the Shire Horse Society, a Gold Medal, or the sum of £10, for the best Mare or Filly in the Shire Horse Classes, under Condition 48, and to the Breeder of the winner under the Conditions stated, a prize of £5.

CLASS 6.—*Shire Filly or Gelding, foaled in* 1909. [5 entries.]

I. (£10.)—F. O. BOMFORD, Chirkenhill, Leigh Linton, near Malvern, bay filly, **Chirkenhill Royal Lassie**; s Dunsmore Optimism, d Beaumont Royal Lassie, s d Dunsmore Jameson.

II. (£5.)—W. AND H. WHITLEY, Primley Farm, Paignton, bay filly, **Champion's Queen** (63186), bred by R. E. Jones, The Farm, Pool Quay, Welshpool: s Childwick Champion (22215), d Lady Normoor (57477), s d Normoor Statesman (18986).

III. (Bronze Medal).—H. OAKLEY, Dewstow, near Newport, Mon., grey filly, **Dewstow Active Girl 2nd**; s Dewstow Chancellor (22288), d Active Girl (34582), s d Anchorite (16488).

R.—P. COATS, Sheepcote, Clifford, Herefordshire, bay filly, **Clifford Dora**; s Tatton Dray King (23777), d Wimbledon Eldorado (58809), s d Tatton Friar (21953).

CLASS 7.—*Shire Filly or Gelding, foaled in* 1908. [2 entries.]

I. (£10.)—H. OAKLEY, Dewstow, near Newport, Mon., bay filly, **Dewstow Beauty** (60081), bred by G. F. Bloxsom, Gilmorton, Lutterworth: s Dunsmore Albert Victor (23262), d Beauty (56002), s d Jeroboam (15172).

ANY AGRICULTURAL BREED.

(The Prizes in Classes 8, 9 and 10 were given by the Cardiff Local Committee).

CLASS 8.—*Cart Brood Mare and Foal, or in-Foal, to Foal before July* 1, 1911, *the property of a Tenant Farmer resident in South Wales or Monmouthshire.* [1 entry.]

I. (£8.)—J. R. PROBERT, Calwhybart, near Brecon, light bay shire, **Princess Dorothy** (Vol. xxx., 58059); s Childwick First Lord (19472), d Leicester, s d King of the West (11723); with foal by Bardon Royal Albert (24920).

CLASS 9.—*Cart Gelding or Filly, foaled in* 1909, *the property of a Tenant Farmer resident in South Wales or Monmouthshire*— [1 entry.]

I. (£6.)—MRS. S. PRICE & SONS, Tyfry Farm, Kenfig Hill, Bridgend, bay filly, **Forest Blossom** (Vol. xxxiii.), bred by L. Price, Tyfry Kenfig Hill; s Castelldu Forest King (25047), d Mayblossom (48727), s d Barton Star (17754).

CLASS 10.—*Cart Colt or Filly, foaled in* 1910, *the property of a Tenant Farmer resident in South Wales or Monmouthshire.*— [5 entries.]

I. (£6.)—L. H. ARTHUR, Redwick House, Magor, dark brown filly, **Redwick Princess**; s Dewstow Rex, d Hendre Lady Graduate (36147), s d Gownsman (14648).

II. (**£3.**)—W. THOMAS, Eglwysnunyd, Port Talbot, Glam., chestnut, **Eglwys Forest King**, bred by W. Pimlott, Newgrange, Meerbrook, near Leek; s Redlynch Forest King (23626), d New Grange Darling (39751), s d Rokeby Friar (14827).

R.—L. REES, North Court, Treffgarne, S.O., bay, **Albert Redd**, bred by J. Griffiths, Lydstep; s Birdsall Metrice, d Holcombe Starlight (23946), s d Holcombe Harold (15642).

COLLIERY HORSES

(The Prizes in Class 11 were given by the Bedwellty Agricultural Society).

CLASS 11.—*Mare or Gelding, not exceeding 15 hands, and not less than 4 or over 7 years of age, the property of a resident in South Wales or Monmouthshire, not being a Colliery Proprietor.* [4 entries.]

I. (**£10.**)—J. DAVIES & SONS, Buttry Hatch Farm, Maesycwmmer, brown gelding, **Mabon**, foaled 1906.

II. (**£6.**)—F. J. AND R. KNIPE, Cwm Farm, Pontypool, dark brown gelding, **Perfection**, foaled 1906.

III. (**£3.**)—G. THOMAS, Bryn Farm, Pontllanfraith, Mon., bay gelding, **Hothfield Lad**, foaled 1906; s Valentine of Hothfield.

R.—E. LEWIS, Berllanlwyd, Blackwood, Mon., black gelding, **Colonel.**

(The Prizes in Class 12 were offered by the Glamorgan Agricultural Auxiliary Fund Committee).

CLASS 12.—*Mare or Gelding, not exceeding 15 hands, that has been worked underground regularly for not less than six months prior to the date of the Show, the property of a resident in Wales or Monmouthshire. First prize, £10—second, £5.*

[NO ENTRY.]

HUNTERS

CLASS 13.—*Hunter Mare in-Foal, or with Foal at foot.* [9 entries.]

I. (**£15.**)—J. DUCHESNE, Shrivenham, Berks, brown, **Maud Emily**; with foal by Battlement.

II. (**£10.**) and Special*—W. AND H. WHITLEY, Primley Farm, Paignton, black brown, **Glowworm** (3885), foaled 1898, bred by J. Irwin, Pallas, Kilmeady, Limerick; s Traverser 2nd, s d Hercules; with foal by Golden Grebe.

* Given by the Hunters' Improvement Society, under Conditions 49. A Gold Medal, or £5 and a Bronze Medal, for the best Hunter Brood Mare in Class 13, ACTUALLY registered with a number in the Hunter Stud Book at the time of the award, not having previously won the Hunters' Improvement Society's Gold Medal as a Brood Mare in 1911, and which must produce a living foal in 1911, or have her foal at foot. In the first instance a certificate to that effect must be forwarded before the Medal is sent. Only prize-winners in the class were eligible for the Medal.

III. (**£3.**) and **R.** for Specials*†—MRS. A. R. POOLE, King's Hill, Dursley, brown, **Pamela**, foaled 1903, bred by the late E. Ranson, Cattistock Farm, Dorchester; s Pantomime, d Kitty; with foal by Battlement.

R.—J. L. NICKISSON, Hinton Manor, Swindon, chestnut, **Sister Anne**, foaled March 13, 1903, bred by C. W. Francis, Horsington, Templecombe; s Pantomime, d Clonsilla (Vols. vii. and viii., 1333); with foal by Red Sahib.

C.—D. DAVIES, M.P., M.F.H., Plas Dinam, Llandinam, Mon., bay, **Florence** (3406), foaled 1895); s May Boy; with foal by Pedlar Brand.

CLASS 14.—*Hunter Filly, Colt, or Gelding, foaled in* 1910. [5 entries.]

I. (**£10.**)—J. L. NICKISSON, Hinton Manor, Swindon, bay filly, **Redwing**, foaled 28th April; s Red Sahib, d Matabele (Vol. v., 3930), s d Basuto.

II. (**£5.**)—VISCOUNT TREDEGAR, Tredegar Park, Newport, Mon., bay colt, **St. Valentine**; s St. Pancras, d Pretoria (Vol. xiii., H.I.S.), s d Gordon.

III. (**Bronze Medal.**)—E. W. ROBINSON, Liscombe, Leighton Buzzard, chestnut colt, **Village Blacksmith**; s Hackenschmidt, d Gretna Green 2nd, s d Baliol.

R.—VISCOUNT TREDEGAR, bay filly, **Red Saint** (4951: s St. Pancras, d Ruby 3rd (3695), s d Lord Molynoo.

CLASS 15.—*Hunter Filly or Gelding, foaled in* 1909. [8 entries.]

I. (**£10.**) and Special†—SIR H. HOARE, Bart., Stourhead, Zeals, S.O., Wilts, bay filly, **Lady May 2nd**; s Stron Ard, d Lady Crafty, by Yard Arm (1442).

II. (**£5.**)—MRS. A. J. WALMSLEY, The Priory, Tetbury, Glos., black gelding, **Royalist** (75 H.S.B., Vol. v.); s Royal Bounty, s d Peppermint.

III. (**£3.**)—W. AND H. WHITLEY, Primley Farm, Paignton, South Devon, brown gelding; s Flaxby, d Glowworm (3885), s d Traverser 2nd.

R.—VISCOUNT TREDEGAR, Tredegar Park, Newport, Mon., chestnut gelding, **Red Capuchin**; s Cappoquin, d Ruby 3rd (3695), s d 2nd Molynoo.

C.—O. H. JAMES, Pencraig, Caerlon, Mon., black mare, **Bessie**; s St. Pancras, d Black Bess, s d Lord Elsmanda.

* Given by the Hunters' Improvement Society under Conditions 49. A Gold Medal, or £5 and a Bronze Medal, for the best Hunter Brood Mare in Class 13, ACTUALLY registered with a number in the Hunter Stud Book at the time of the award, not having previously won the Hunters' Improvement Society's Gold Medal as a Brood Mare in 1911, and which must produce a living foal in 1911, or have her foal at foot. In the first instance a certificate to that effect must be forwarded before the Medal is sent. Only prize-winners in the class were eligible for the Medal.

† Given by the Hunters' Improvement Society under Conditions 49. A Silver Medal, or £1 (at the option of the winner), for the best Hunter Mare or Gelding of any age, not having previously won the Society's Silver Medal under this scheme in 1911, bred by a Thoroughbred or Registered Hunter Sire, and out of a Registered Mare or a Mare registered in Volume 5 of the Hunter Stud Book, under Condition 50. Only prize winners in the classes were eligible for the Medal.

CLASS 16.—*Hunter Filly or Gelding, foaled in* 1908. [3 entries.]

I. (£15.)—R. COTTRILL, Sandal Lodge, Droitwich, chestnut gelding, **Condor** (H.I.S. Vol. v., Supp. No. 67).

II. (£10.)—D. DAVIES, M.P., M.F.H., Plas Dinam, Llandinam, Mont., chestnut filly, **Patricia** (3621), bred by Mrs. A. R. Poole, King's Hill, Dursley, Glos.; s Battlement, d Pamela (3616), s d Pantomime.

III. (**Bronze Medal.**)—D. DAVIES, M.P., M.F.H., bay filly, **Amy** (3273), bred by Sir M. R. Burrell, Bart., Knepp Castle, Horsham, Sussex; s Rousseau, d Norah.

CLASS 17.—*Hunter Mare or Gelding, foaled in* 1907. [4 entries.]

I. (£15.)—J. H. STOKES, Great Bowden, Market Harborough, bay gelding.

II. (£10.)—W. J. TATEM, The Court, St. Fagans, Cardiff, dark brown gelding, **Pen-y-lan Huntsman,** bred by J. Day, Huxham, Shepton Mallet; s Pantomime.

III. (**Bronze Medal.**)—J. DEARDEN, Haycombe Farm, Sutton Veney, Wilts, bay gelding.

R.—H. DYSON, The Old Priory, Charter Ley, Basingstoke, grey gelding, **The Bard,** bred by the late A. Wheatley, F.R.C.V.S.L., Friar Street, Reading; s Tasso.

CLASS 18.—*Hunter Mare or Gelding, foaled before* 1907. [4 entries.]

I. (£15.)—J. H. STOKES, Great Bowden, Market Harborough, bay gelding, foaled 1906.

II. (£10.)—H. DYSON, The Old Priory, Charter Ley, Basingstoke, dark chestnut gelding, **The Baron,** foaled 1905, bred by R. C. Dames, South Cerney, Cirencester; s The Marquis.

HACKNEYS.

(Registered or eligible for registration in the Hackney Horse Society's Stud Book).

CLASS 19.—*Hackney Mare in-Foal or with Foal at foot.* [2 entries.]

I. (£15.)—T. MATHIAS, Black Horse, Pontardulais, chestnut, **Hornfoot** (11016), foaled 1896, bred by H. Moore, Burn Butts, Hull; s Clifton 2nd (4689), d Snowdrop (324), by Denmark (177); with foal.

CLASS 20.—*Hackney Filly, Colt, or Gelding, foaled in* 1910. [2 entries.]

I. (£10) and Special*—W. B. TUBBS, J.P., The Paddocks, Mill Hill, London, N.W., bay filly, **Apex**; s Leopard (9783), d Lighthouse (15977), s d Forest King (5621).

II. (**Silver Medal.**)—R. H. SAMPSON, Bryngwili, Pontardulais, chestnut filly, **Bryngwili Flash**; s Flash Cadet (10203), d Princess Pauline (18511), s d Polonius (4931).

* Given by the Hackney Horse Society, under Conditions 51, a Silver Medal for the best Mare or Filly exhibited in Classes 19 to 25.

CLASS 21.—*Hackney Filly or Gelding, foaled in* 1909. [1 entry.]

I. (£10) and R. for Special*—W. B. TUBBS, J.P., The Paddocks, Mill Hill, London, N.W., chestnut filly, **Adbonds** (21211); s Administrator (8047), d Pious Bonds (16103), s d Polonius (4931).

CLASS 22.—*Hackney Mare or Gelding, foaled in* 1907 *or* 1908. [1 entry.]

I. (£10.)—E. GRIFFITHS, Compton House, Nantymoel, chestnut gelding, **Margam Wildfire**, bred by T. Nicholas, Victoria Buildings, Port Talbot; s Lord Avondale (8551), d Crossed Fire, s d Bonfire.

CLASS 23.—*Hackney Mare or Gelding, foaled before* 1907. [3 entries.]

I. (£10.)—T. J. MATHIAS, Llysmyrddin, Cardigan, chestnut gelding, **Mountain Dew** (10328 H.S.B.), foaled 1905, bred by A. Morton, Gowanbark, Darvel; s Lord Ossington (8939 H.S.B.), d Angelica (H.S.B.).

II. (£5.)—L. P. SMITH, Woodhouse, Stroud, Glos., chestnut gelding, **Mel-Valley's Perfect Wonder** (late **Berkeley Claudius**) (8372), foaled 1902, bred by the late A. S. Day, Berkeley Stud, near Crewe; s Lord Hamlet (3750), d Peggy Sure Four (13014), by Damo Royal (5575).

III. (**Bronze Medal.**)—L. P. SMITH, chestnut gelding, **Little Ruby**.

(The Prizes in Classes 24 and 25 were given by the Cardiff Local Committee).

CLASS 24.—*Hack, Mare or Gelding, exceeding* 14 *hands, and not under four years old, the property of a resident in South Wales or Monmouthshire.* [1 entry.]

I. (£8.)—T. MORGAN, Capital and Counties Bank Buildings, Pontypridd, chestnut gelding, foaled 1905.

CLASS 25.—*Cob Mare or Gelding,* 14 *hands and under, the property of a resident in South Wales or Monmouthshire.* [2 entries.]

I. (£8.)—T. J. MATHIAS, Llysmyrddin, Cardigan, bay, **Wonder**, foaled 1905, bred by Wainwright & Sons, Talke Stud, near Crewe; s Carlton Wonder.

PONIES.

(Of the Prizes given in Classes 26 to 32, £12 was contributed by Viscount Tredegar).

CLASS 26.—*Stallion, not exceeding* 14.2 *hands, suitable to get Polo or Riding Ponies.* [2 entries.]

I. (£6.)—THE KEYNSHAM STUD CO., LTD., Keynsham, near Bristol, dark chestnut, **White Wings**, foaled 1906, bred by the Radnorshire Polo and Riding Pony Co., Ltd., The Farm, Bleddfa, Llangunllo, Radnorshire; s White Mask (190), d First Flight (615), s d Balquihidar.

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* Given by the Hackney Horse Society, under Conditions 51, a Silver Medal for the best Mare or Filly exhibited in Classes 19 to 25.

II. (**Silver Medal**).—SIR J. BARKER, Bart., The Grange, Bishops Stortford, bay, **Othrae**, foaled 1905, bred by W. E. Elsey; s Raeburn, d Othery, s d King Monmouth.

(The Prizes in Class 27 were given by the Welsh Pony and Cob Society).

CLASS 27—*Welsh Mountain Stallion, not exceeding* 12.2 *hands, the property of a resident in Wales or Monmouthshire.* [3 entries.]

I. (**£6**) and Special*—J. JAMES, Monachdy, Ynysybwl, grey, **Skylight** (48 W.S.B.), bred by M. Lloyd, Llanurda, Carmarthen; s Starlight, d Brownie.

II. (**£3**) and **R.** for Special*—E. JONES, Manoravon, Llandilo, bay, **My Brother**, foaled 1908; s Starlight (4 W.C. & P.S.B.), d Myfanwy (356 W.C. & P.S.B.).

CLASS 28.—*Mare, not exceeding* 14.2 *hands, suitable to breed Polo or Riding Ponies, in-Foal, or with Foal at foot.* [4 entries.]

I. (**£6.**)—SIR J. BARKER, Bart., The Grange, Bishops Stortford, bay, **Silver Star** (1020), aged, bred by G. Hutchings, Claremount, Paignton, Devon; s Knight of the Laund, d by Acrobat; with foal by Othrae.

II. (**£4.**)—J. W. FLEMING, Chilworth Stud, Romsey, Hants, chestnut, **Pearl 2nd** (1924 P. & R.P.S.B.), aged, with foal by Rajah (417).

(The Prizes in Classes 29 and 30 were given by the Cardiff Local Committee).

CLASS 29.—*Brood Mare and Foal, or in-Foal to Foal before July* 1, 1911, *not exceeding* 13.2 *hands, the property of a resident in South Wales or Monmouthshire.* [1 entry.]

I. (**£5.**)—F. W. JONES, Trebanog Pony Stud, Porth, chestnut mare, **Latest Fashion**, 6y.; s Why Not? d Kitty; with foal.

CLASS 30.—*Welsh Mountain Brood Mare, in-Foal, to Foal before July* 1, 1911, *or with Foal at foot, not exceeding* 12.2 *hands, and the property of a resident in Wales or Monmouthshire.* [3 entries.]

I. (**£7.**) and Special†—J. JAMES, Monachdy, Ynysybwl, grey, **Mona Cymry** (2288 W.S.B.), foaled 1907; s Skylight (48 W.S.B.), d Mona Antic (2164 W.S.B.): with foal.

II. (**£3.**)—A. F. FOX, Chapel Farm, Clytha, Abergavenny, grey, **Silverlocks** (245), foaled 1896, bred by C. Jones, Golden Grove, Crickhowell; with foal by Dyoll Starlight (4).

* Given by the Welsh Pony and Cob Society, a Silver Medal for the best Exhibit in Class 27.

† Given by the Welsh Pony and Cob Society, a Silver Medal for the best exhibit in Class 30.

CLASS 31.—*Filly, Colt, or Gelding, foaled in* 1909, *not exceeding* 14.1 *hands.* [3 entries.]

I. (**£6.**)—H. FAUDEL-PHILLIPS, Mapleton Stud, Edenbridge, Kent, chestnut filly, **Best Gown**, foaled 1907, bred by the Keynsham Stud Co., Keynsham, near Bristol: s Gown Boy, d Oh My 2nd (1000), s d Mootrub.

II. (**£4.**)—SIR J. BARKER, Bart., The Grange, Bishops Stortford, Herts, brown filly, **Miss Buckingham**, foaled 1909; s Sandiway (121), d Buckingham.

III. (**Bronze Medal.**)—MRS. A. R. POOLE, King's Hill, Dursley, chestnut filly, **Oyster Shell**, foaled 1909; s Rudheath, d Seagull (1624 Vol. ix.), s d Sea Dog.

CLASS 32.—*Filly, Colt, or Gelding, foaled in* 1908, *not exceeding* 14.1½ *hands.* [3 entries.]

I. (**£6.**)—H. FAUDEL-PHILLIPS, Mapleton Stud, Edenbridge, Kent, chestnut filly, **Chit-Chat**, foaled 1908, bred by Col. E. N. Henriques, Ambarrow Hill, Sandhurst: s Mootrub (32), d Housemaid (1183).

II. (**£4.**)—SIR J. BARKER, Bart., The Grange, Bishops Stortford, bay filly, **Sapho**, foaled 1908; s Sandiway (121), d Saphire, s d Pet Fox.

III. (**Bronze Medal.**)—E. GRIFFITHS, Compton House, Nantymoel, bay gelding, **Trustful Again**, foaled 1908, bred by T. James, Myrtle Hill, Cardigan; s Trustful (2741), d Blown Over, s d Rosador.

SPECIAL PRIZES.

GIVEN BY THE POLO AND RIDING PONY SOCIETY,

SUBJECT TO CONDITIONS NO. 53.

A Silver Medal for the best Polo Pony Brood Mare, registered or eligible for registration in the Stud Book.

I.—SIR J. BARKER, Bart., The Grange, Bishops Stortford, bay, **Silver Star** (1020), aged, bred by G. Hutchings, Claremount, Paignton, Devon; s Knight of the Laund, d by Acrobat; with foal by Othrae.

R.—J. W. FLEMING, Chilworth Stud, Romsey, Hants, chestnut, **Pearl 2nd** (1924 P. & R.P.S.B.), aged, with foal by Rajah (417).

A Silver Medal for the best Polo Pony Stallion, registered or eligible for registration in the Stud Book; or best Polo Pony Entire Colt, entered or eligible for the Supplement, one, two, or three years old.

I.—THE KEYNSHAM STUD CO., LTD., Keynsham, near Bristol, dark chestnut **White Wings**, foaled 1906, bred by the Radnorshire Polo and Riding Pony Co., Ltd., The Farm, Bleddfa, Llangunllo, Radnorshire; s White Mask (190), d First Flight (615), s d Balquihidar.

R.—SIR J. BARKER, Bart., The Grange, Bishops Stortford, bay, **Othrae**, foaled 1905, bred by W. E. Elsey; s Raeburn, d Othery, s d King Monmouth.

A Bronze Medal for the best Foal, entered or eligible for the Supplement.

I.—Sir J. Barker, Bart., The Grange, Bishops Stortford; s Othrae, d Silver Star.

R.—J. W. Fleming, Chilworth Stud, Romsey, Hants; s Rajah, d Pearl 2nd.

HARNESS AND JUMPING CLASSES

HARNESS

Class 33.—*Mare or Gelding, not over* 14.2 *hands, driven in harness on the first day of the Show.* [10 entries.]

I. (£10.)—T. J. Mathias, Llysmyrddin, Cardigan, bay, **Fire.**

II. (£5.)—D. Rees Jones, Penbyrn Hackney Stud, Aberdare, bay Mare, **Bromley Belle** (18964), foaled 1905, bred by J. Prentice, Carolside, Uddington, N.B.: s Sir Horace (5402), d Terrington Floweret (13970), by Caxton.

III. (£2.)—C. Radcliffe, 19, Newport Road, Cardiff, chestnut mare, **Peterston Pearl** (19421); s Polonius (4931), d Princess Royal (10442), s d His Majesty (2513).

R.—G. Phillips, Bronheulog, Blaenllechan, Ferndale, bay, **Hywel's Syr Horace,** foaled 1903, bred by the late J. Howells, Llamaes Stud Cardiff; s Sir Horace (5402), d Dewdrop (5223), s d General Gordon (2084).

C.—L. P. Smith, Woodhouse, Stroud, Glos., chestnut gelding, **Mel-Valley's Perfect Wonder** (late **Berkeley Claudius**) (8372), foaled 1902, bred by the late A. S. Day, Berkeley Stud, near Crewe; s Lord Hamlet (3750), d Peggy Sure Four (13014), by Dame Royal (5575).—Ditto, chestnut gelding, **Little Ruby.**

Class 34.—*Tandems (Mares or Geldings), driven in harness on the first day of the Show.* [4 entries.]

I. (£10.)—Miss D. Schintz, Childwall Hall, Liverpool, chestnut mare, **Woodhatch Ruth,** foaled 1907, bred by R. P. Evans, J.P., Woodhatch Stud, Reigate; s Evanthius, d Terrington Ruth, s d Lord Drewton; and chestnut mare, **Catalina,** foaled 1902, bred by Burdett Coutts, M.P., Highgate Stud, London; s Polonius, d Cuckoo Bright, s d Last Fashion.

II. (£5.)—T. J. Mathias, Llysmyrddin, Cardigan, bay, **Fire**; and bay, **The Sort.**

III. (Bronze Medal.)—L. P. Smith, Woodhouse, Stroud, Glos., chestnut gelding, **Mel Valley's Perfect Wonder** (late **Berkeley Claudius**) (8372), foaled 1902, bred by the late A. S. Day, Berkeley Stud, near Crewe; s Lord Hamlet (3750), d Peggy Sure Four (13014), by Dame Royal (5575); and chestnut gelding, **Little Ruby.**

CLASS 35.—*Mare or Gelding,* 15 *hands or over, driven in harness on the second day of the Show.* [8 entries.]

I. (£10.)—MISS D. SCHINTZ, Childwall Hall, Liverpool, chestnut mare, **Catalina,** foaled 1902, bred by Burdett Coutts, M.P., Highgate Stud, London; s Polonius, d Cuckoo Bright, s d Last Fashion.

II. (£5.)—T. J. MATHIAS, Llysmyrddin, Cardigan, chestnut, **Mountain Dew.**

III. (£2.)—C. RADCLIFFE, 19, Newport Road, Cardiff, dark chestnut gelding, **Peterston Lord Dash It**; s His Majesty (2513), d Lady Dash It (11084), s d Robert Elsmere (2659).

R.—T. NICHOLAS, Victoria Buildings, Port Talbot, Glam., bay gelding, **Margam Antonio,** foaled 1906, bred by R. Whitworth, Market Weighton, Yorks; s Polonius (4931), d Gribthorpe Pride, s d Langton.

CLASS 36.—*Pair of Carriage Horses (Mares or Geldings), driven in double harness on the second day of the Show.* [5 entries.]

I. (£10.)—MISS D. SCHINTZ, Childwall Hall, Liverpool, chestnut mare, **Woodhatch Ruth,** foaled 1907, bred by R. P. Evans, J.P., Woodhatch Stud, Reigate; s Evanthius, d Terrington Ruth, s d Lord Drewton; and chestnut mare, **Catalina,** foaled 1902, bred by Burdett Coutts, M.P., Highgate Stud, London; s Polonius, d Cuckoo Bright, s d Last Fashion.

II. (£5.)—T. J. MATHIAS, Llysmyrddin, Cardigan, bay, **Fire**: and bay, **The Sort.**

III. (Bronze Medal.)—C. RADCLIFFE, 19, Newport Road, Cardiff, dark chestnut gelding, **Peterston Lord Dash It**; s His Majesty (2513), d Lady Dash It (11084), s d Robert Elsmere (2659); and dark chestnut mare, **Peterston Pride** (17639); s His Majesty (2513), d Lady Dash It (11084), s d Robert Elsmere (2659).

R.—L. P. SMITH, Woodhouse, Stroud, Glos., chestnut gelding, **Mel-Valley's Perfect Wonder** (late **Berkeley Claudius**) (8372), foaled 1902, bred by the late A. S. Day, Berkeley Stud, near Crewe: s Lord Hamlet (3750), d Peggy Sure Four (13014), by Dame Royal (5575): and chestnut gelding, **Little Ruby.**

CLASS 37—*Mare or Gelding, over* 14.2 *and under* 15 *hands, driven in harness on the third day of the Show.* [7 entries.]

I. (£10.)—A. BUTCHER, George and Railway Hotel, Bristol, brown mare, **Lady Gordon.**

II. (£5.)—T. E. JERMAN, 92, High Street, Dowlais, chestnut gelding, **Penydarren's Surprise,** foaled 1905, bred by D. Lewis, Village Farm, Langattock, Crickhowell; s Hendre Errand Boy.

III. (£2.)—E. JOHN, Trenos, Llanharan, Glam., bay mare, **Relish Maid,** foaled 1907; s Middleton Relish, d Modern Girl.

R.—A. W. BALDOCK, Penlan Farm, Barrack Hill, Newport, chestnut mare, **Lady Cadet,** foaled 1907, bred by H. Dent, Alway Farm, Lliswerry, Newport, Mon.; s Melton Cadet.

CLASS 38.—*Trotting. Best Mare, Stallion or Gelding, under* 15 *hands, for speed and action, driven in harness on the third day of the Show.* [7 entries.]

I. (£10.)—L. P. SMITH, Woodhouse, Stroud, Glos., chestnut gelding, **Mel-Valley's Perfect Wonder** (late **Berkeley Claudius**) (8372), foaled 1902, bred by the late A. S. Day, Berkeley Stud, near Crewe ; s Lord Hamlet (3750), d Peggy Sure Four (13014), by Dane Royal (5575).

II. (£5.)—T. E. JERMAN, 92, High Street, Dowlais, chestnut gelding, **Penydarren's Surprise**, foaled 1905, bred by D. Lewis, Village Farm, Langattock, Crickhowell ; s Hendre Errand Boy.

III. (£2.)—T. H. DAVIES, 67, Bute Street, Aberdare, brown mare, **Maggie C.**

R.—T. VAISEY, Pontypool, bay mare, **Welsh Kitte** ; s Muskavite Junior.

CLASS 39.—*Mare or Gelding, not over* 13.2 *hands, driven in harness on the fourth day of the Show.* [10 entries.]

I. (£10.)—L. P. SMITH, Woodhouse, Stroud, Glos., chestnut gelding, **Mel-Valley's Perfect Wonder** (late **Berkeley Claudius**) (8372), foaled 1902, bred by the late A. S. Day, Berkeley Stud, near Crewe ; s Lord Hamlet (3750), d Peggy Sure Four (13014), by Dane Royal (5575).

II. (£5.)—MRS GLENCROSS, St. Martins, East Brent, bay gelding, **Spring Chicken.**

III. (£2.)—T. J. MATHIAS, Llysmyrddin, Cardigan, bay mare, **Sweet Melody.**

R.—L. P. SMITH, chestnut gelding, **Little Ruby.**

V.H.C.—F. L. WALKER, Meadow Street, Cardiff, roan gelding, **Fairfield Model,** bred by T. Thomas, The Park, Tondu ; s Fairfield Express, d Brecon Bess.—D. DAVIES, Bryn Stud Farm, Brynamman, Carmarthenshire, bay gelding, **Amman Horace,** foaled 1907, bred by Mrs. Jones, Gillefaharin, Llandywal ; s Tregaron Horace (9476 H.S.B.), d Lady Lucy.

C.—J. H. TATE, Hackney Stud, Freeman Street, Grimsby, bay mare, **Shirley Fly,** bred by J. Jones, Wrexham ; s His Majesty, d Whitegate Cracker.

CLASS 40.—*Trotting. Best Mare, Stallion, or Gelding,* 15 *hands or over, for speed and action, driven in harness on the fourth day of the Show.* [4 entries.]

I. (£10.)—J. WILLIAMS, Forgehammer Hotel, Pontnewynydd, bay gelding, **Honest Tom,** foaled 1899, bred by E. Williams, Victoria Hotel, Barry Docks ; s St. Fagan's Boy, d Laura.

II. (£5.)—T. VAISEY, Pontypool, bay mare, **Welsh Kitte** ; s Muskavite Junior.

III. (Bronze Medal.)—T. H. DAVIES, 67, Bute Street, Aberdare, bay mare, **Violet D.**

(The Prizes in Class 41 were given by the Cardiff Local Committee.)

CLASS 41.—*Heavy Dray or Cart Mare or Gelding, the property of a resident in South Wales or Monmouthshire, exhibited in harness on the fifth day of the Show.* [10 entries.]

I. (£10.)—J. PERKINS, Closglas Farm, Llandilo, Carmarthen, bay mare, **Countess,** foaled 1907; s Penyfai Conqueror (21741), d Diamond (41675), s d Buccaneer 3rd (15514).

II. (£6.)—PENARTH URBAN DISTRICT COUNCIL, Council Offices, Penarth, Glam., light bay gelding, **Duke.**

III. (£4.)—J. MOON & SONS, Hope Street and 269, Bute Street, Cardiff, bay gelding, **Captain,** foaled 1905, bred by the Earl of Bessborough, Pilltown, Ireland.

R.—CARDIFF RAILWAY COMPANY, Bute Docks, Cardiff, bay gelding, **Rufus,** foaled 1905; s Warsley Triumph, d Llyncelyn Renown.

H.C.—N. REES & SONS, Hay and Corn Merchants, Cardiff, roan gelding, **Emlyn Drayman,** foaled 1905, bred by I. Williams, Castleton Farm, St. Athan, Glam.; s Emlyn Squire, d Bounce, s d Black William.

C.—CARDIFF RAILWAY COMPANY, bay, **Taffy,** foaled, 1906; s Buscot Statesman.

(The Prizes in Classes 42 to 45 were given by the Cardiff May Day Show Society.)

CLASS 42.—*Heavy Dray or Cart Mare or Gelding, exhibited on the fifth day of the Show, with gear suitable for, and having been worked by, a Cardiff Brewer, Builder, Timber Merchant, Railway Company, Haulier, Tradesman, or the Corporation for not less than three months immediately prior to the date of the Show.* [14 entries.]

I. (£5.)—J. MOON & SONS, Hope Street and 269, Bute Street, Cardiff, bay gelding, **Captain,** foaled 1905, bred by the Earl of Bessborough, Pilltown, Ireland.

II. (£2.)—CARDIFF CITY COUNCIL, City Hall, Cardiff, bay gelding, **Prince,** foaled 1903.

III. (£1.)—CARDIFF CITY COUNCIL, bay mare, **Beauty,** foaled 1902.

R.—N. REES & SONS, Hay and Corn Merchants, Cardiff, roan gelding, **Emlyn Drayman,** foaled 1905, bred by I. Williams, Castleton Farm, St. Athan, Glam.; s Emlyn Squire, d Bounce, s d Black William.

H.C.—CARDIFF CITY COUNCIL, bay gelding, **Darby,** foaled 1904.

C.—CARDIFF CITY COUNCIL, bay gelding, **Gilbert,** foaled 1905.—Ditto, brown gelding, **General,** foaled 1904.

CLASS 43.—*Light Cart Mare or Gelding, suitable for, and having been worked by, a Cardiff Tradesman for not less than three months immediately prior to the date of the Show, and regularly driven by his servants for the delivery of his goods. Exhibited with trade vehicle and harness on the fifth day of the Show.* [5 entries.]

I. (**£5.**)—H. J. CRIDLAND, 31, Ferry Road, Cardiff, bay gelding, foaled 1906.

II. (**£2.**)—H. WOODLEY & Co., (Meat Importers), 33, Adam Street, Cardiff, black gelding, **Champion**, foaled 1906, bred by J. C. Thomas, Boverton Court, Glamorgan; s Leven's Masterpiece, d Darling.

III. (**£1.**)—H. T. COLE, Coal Merchant, 90, Broadway, Cardiff, bay mare, **Loster**, foaled 1900.

R.—J. MOON & SONS, Hope Street and 269, Bute Street, Cardiff, bay mare, **Pennon Princess**, foaled 1905, bred by T. John, late Pennon Farm, Llancarran.

CLASS 44.—*Light Mare or Gelding, over* 14 *hands, suitable for, and having been worked by, a Cardiff Tradesman for not less than three months immediately prior to the date of the Show, and regularly driven by his servants for the delivery of his goods. Exhibited with trade vehicle and harness on the fifth day of the Show.* [8 entries.]

I. (**£5.**)—T. EVANS & CO., Emlyn Stores, Cardiff, bay, **Emlyn Royalty**; s His Majesty, d Lady Denmark Go Bang, s d Sir Horace.

II. (**£2.**)—D. REES, Llwynygrant, Penylan, near Cardiff, grey mare, **Lady Connaught**, 4y.; by Penylan Connaught.

III. (**£1.**)—H. THOMAS, Fair Oak Road, Cardiff, roan gelding, **Fair Oak Squire**, foaled 1906.

R.—J. CRIDLAND, Lower Cathedral Road, Cardiff, chestnut gelding, **Robin Hood**, bred by H. Wood, Aberavon; s Royal Polonius, d Cardigan Bess, s d Lorenzo.

C.—S. T. WOODS, 17, Llanfair Road, Cardiff, mare, **Noble Girl**; s Lord Bang.
—J. H. MERRETT, 49, Salisbury Road, Cardiff, roan mare, **Daisy**, aged.

CLASS 45.—*Light Mare or Gelding, not over* 14 *hands, suitable for, and having been worked by, a Cardiff Tradesman for not less than three months immediately prior to the date of the Show, and regularly driven by his servants for the delivery of his goods. Exhibited with trade vehicle and harness on the fifth day of the Show.* [9 entries.]

I. (**£5.**)—H. JENKS, 140, Clifton Street, Cardiff, roan mare, **Hilda May**.

II. (**£2.**)—F. L. WALKER, Meadow Street, Cardiff, roan gelding, **Fairfield Model**, bred by T. Thomas, The Park, Tondu; s Fairfield Express, d Brecon Bess.

III. (£1.)—G. H. WILLIAMS, Coedygonas, Penylan, Cardiff, bay gelding, **Taffy.**

R.—F. BROWN, Butcher, City Road, Cardiff, chestnut mare, **Princess**; s Cocalder Squire.

H.C.—S. BATTEN, 56, Tudor Road, Riverside, Cardiff, chestnut mare, **Lady Cardigan** (5573 Vol. v., P.S. Book), foaled 1903, bred by Mrs. Morris, Brovan Mills, Kilgerran, R.S.O.; s Myrtle Gentleman (277 Vol. vii., W.P. & C.S.B.), d Dolly, s d Cardigan Meteor.

SPECIAL PRIZE

OFFERED BY THE HACKNEY HORSE SOCIETY.

A Prize of £5, *or a Gold Medal, for the best Mare or Gelding exhibited in Single Harness in Classes* 33 *to* 45, *subject to Conditions* 52.—£5.

[NO AWARD.]

JUMPING.

CLASS 46.—*Mare or Gelding,* 15 *hands and over, jumping in the best form on the first day of the Show.* [14 entries.]

I. (£10.)—L. J. PEASE, Tiverton, Tarporley, Cheshire, bay gelding, **Veto,** aged.

II. (£5.)—F. V. GRANGE, Alvaston, Nantwich, gelding, **Rufus.**

III. (£2.)—T. AND W. SINGER, High House Farm, Corsley, Wilts, chestnut gelding, **Springbok.**

R.—J. AND T. GLENCROSS, Garth House Stables, Weston-super-Mare, bay horse, **Tradesman.**

CLASS 47.—*Mare or Gelding, under* 15 *hands, jumping in the best form on the first day of the Show.* [11 entries.]

I. (£10.)—J. AND T. GLENCROSS, Garth House Stables, Weston-super-Mare, bay mare, **Kitty.**

II. (£5.)—F. W. FOSTER, Marsh Farm, Etwall, Derby, black gelding, **Swallow.**

III. (£2.)—S. PHELPS, Churcham, Gloucester, bay, **Laddie.**

R.—J. & T. GLENCROSS, grey mare, **Greylight.**

CLASS 48.—*Mare or Gelding,* 15.3 *hands and over, jumping in the best form on the second day of the Show.* [12 entries.]

I. (£10.)—T. AND W. SINGER, High House Farm, Corsley, Wilts, chestnut gelding, **Springbok.**

II. (£5.)—J. AND T. GLENCROSS, Garth House Stables, Weston-super-Mare, chestnut mare, **Miss Dainty.**

III. (£2.)—W. WINANS, Surrenden, Pluckley, grey gelding, **Greyhawk.**

R.—W. WINANS, bay gelding, **Orphan Boy.**

CLASS 49.—*Mare or Gelding, under* 15.3 *hands, jumping in the best form on the second day of the Show.* [15 entries.]

I. (**£10.**)—F. V. GRANGE, Alvaston, Nantwich, gelding, **Rufus.**

II. (**£5.**)—J. AND T. GLENCROSS, Garth House Stables, Weston-super-Mare, bay horse, **Tradesman.**

III. (**£2.**)—T. AND W. SINGER, High House Farm, Corsley, Wilts, chestnut gelding, **Compton Bassett.**

R.—J. AND T. GLENCROSS, bay mare, **Kitty.**

CLASS 50.—*Mare or Gelding,* 15 *hands and over, jumping in the best form, on the third day of the Show.* [17 entries.]

I. (**£10.**)—T. AND W. SINGER, High House Farm, Corsley, Wilts, chestnut gelding, **Compton Bassett.**

II. (**£5.**)—G. LORT STOKES, Bellevue Chambers, Tenby, grey gelding, **Tiny White.**

III. (**£2.**)—W. WINANS, Surrenden, Pluckley, bay gelding, **Orphan Boy.**

R.—J. AND T. GLENCROSS, Garth House Stables, Weston-super-Mare, chestnut mare, **Miss Dainty.**

CLASS 51.—*Mare or Gelding, under* 15 *hands, jumping in the best form on the third day of the Show.* [12 entries.]

I. (**£10.**)—S. PHELPS, Churcham, Gloucester, bay, **Laddie.**

II. (**£5.**)—J. AND T. GLENCROSS, Garth House Stables, Weston-super-Mare, bay mare, **Kitty.**

III. (**£2.**)—J. REES, Lower House, Llysyfranc, Clarbeston Road, bay mare, **Gipsy Queen**, foaled 1906, bred by J. Llewellyn, Haver Hill, Spittal, Treffgarne; s Utility, d Irish Polo.

R.—F. W. FOSTER, Marsh Farm, Etwall, Derby, black gelding, **Swallow.**

CLASS 52.—*Mare or Gelding,* 15.3 *hands and over, jumping in the best form on the fourth day of the Show.* [13 entries.]

I. (**£10.**)—G. LORT STOKES, Bellevue Chambers, Tenby, grey gelding, **Tiny White.**

II. (**£5.**)—T. AND W. SINGER, High House Farm, Corsley, Wilts, chestnut gelding, **Springbok.**

III. (**£2.**)—W. WINANS, Surrendon, Pluckley, grey gelding, **Greyhawk.**

R.—G. LORT STOKES, brown gelding, **Mr. Dooley.**

CLASS 53.—*Mare or Gelding, under* 15.3 *hands, jumping in the best form on the fourth day of the Show.* [16 entries.]

I. (**£10.**)—J. AND T. GLENCROSS, Garth House Stables, Weston-super-Mare, bay horse, **Tradesman.**

II. (**£5.**)—F. V. GRANGE, Alvaston, Nantwich, gelding, **Rufus.**

III. (**£2.**)—T. AND W. SINGER, High House Farm, Corsley, Wilts, chestnut gelding, **Compton Bassett.**

R.—J. AND T. GLENCROSS, bay mare, **Blink Bonny.**

CLASS 54.—*Mare or Gelding,* 15 *hands and over, jumping in the best form on the fifth day of the Show.* [18 entries.]

I. (**£10.**)—A. H. JONES, M.R.C.V.S.L., 55, Upper Thomas Street, Merthyr Tydfil, bay mare, **Zena Dare.**

II. (**£5.**)—W. GRUNDY, Worcester.

III. (**£2.**)—J. AND T. GLENCROSS, Garth House Stables, Weston-super-Mare.

R.—D. F. LEWIS, Plasgeler, Llandyssil, South Wales, bay gelding, **The Squire.**

CLASS 55.—*Mare or Gelding, under* 15 *hands, jumping in the best form on the fifth day of the Show.* [8 entries.]

I. (**£10.**)—A. H. JONES, M.R.C.V.S.L., 55, Upper Thomas Street, Merthyr Tydfil, grey mare, **Silver Sprey.**

II. (**£5.**)—J. REES, Lower House, Llysyfranc, Clarbeston Road, bay mare, **Gipsy Queen,** foaled 1906, bred by J. Llewellyn, Haver Hill, Spittal, Treffgarne, s Utility, d Irish Polo.

III. (**£2.**)—W. GRUNDY, Worcester, **Stratford Lass.**

R.—J. AND T. GLENCROSS, Garth House, Weston-super-Mare, aged.

CATTLE.

DEVON.

(The 1st Prize in Class 56 was given by the Devon Cattle Breeders' Society).

CLASS 56.—*Devon Cow, in-Milk, calved before* 1908. [2 entries.]

I. (**£10.**)—MRS. A. C. SKINNER & SON, Pound, Bishops Lydeard, **Pound Brassy 12th** (21665), born 24th March, 1906; s Royal Charter (4488), d Brassey 6th (16212), s d Harold 2nd (3126).

CLASS 57.—*Devon Heifer, in-Milk, calved in* 1908. [4 entries.]

I. (**£10.**)—VISCOUNT PORTMAN, Bryanston, Blandford, **Bryanston Graceful,** born 19th March; s Browda Captain (5440), d Compton Goodluck 2nd (22313).

II. (**£5.**)—MRS. A. C. SKINNER & SON, Pound, Bishops Lydeard, **Pound Rosebud 13th,** born 19th January; s Capton Ploughboy (4923), d Pound Rosebud 9th (20974), s d Councillor (3407).

III. (Bronze Medal.)—VISCOUNT PORTMAN, **Bryanston Rhoda**, born 11th January: s Overton Eclipse (5078), d Compton Rubble (19916).

CLASS 58.—*Devon Heifer, calved in* 1909. [6 entries.]

I. (£10.)—C. MORRIS, Highfield Hall, St. Albans, Herts, **Highfield Countess 2nd** (23719), born 15th January: s Pound Bellringer (5617), d Highfield Countess (21522), s d Pound Monarch (5089).

II. (£5.)—VISCOUNT PORTMAN, Bryanston, Blandford, **Carol**, born 9th March s Carolus (5150), d Flighty (20896).

III. (£2.)—VISCOUNT PORTMAN, **Bryanston Partridge**, born 12th January; s Bryanston Ajax (5974), d Compton Princess 2nd.

R.—VISCOUNT PORTMAN, **Bryanston Goodwill**, born 28th March; s Bryanston Ajax (5974), d Compton Goodluck 2nd (22313).

CLASS 59.—*Devon Heifer, calved in* 1910. [8 entries.]

I. (£10.)—MRS. A. C. SKINNER & SON, Pound, Bishops Lydeard, **Pound Rosebud 17th**, born 15th February; s Pound Gladiator (6169), d Pound Rosebud 12th (22353), s d Pound Hestercombe Duke (5341).

II. (£5.)—C. MORRIS, Highfield Hall, St. Albans, Herts, **Highfield Ladybird 4th** (Vol. xxxiv.), born 3rd January; s Pound Lord Brassy 5th (5622), d Highfield Ladybird 3rd (21531), s d Musician (4830).

III. (£2.)—VISCOUNT PORTMAN, Bryanston, Blandford, **Bryanston Periwinkle**, born 11th January; s Bryanston Golden Rod (5997), d Bryanston Pansy (22979).

R.—VISCOUNT PORTMAN, **Bryanston Gertrude**, born 15th January; s Bryanston Golden Rod, (5997), d Bryanston Glance (22288).

CLASS 60.—*Devon Bull, calved in* 1907 *or* 1908. [3 entries.]

I. (£10.)—VISCOUNT PORTMAN, Bryanston, Blandford, **Bryanston Pitcher**, born 8th May, 1907; s Pound Pink 'un, d Nevithey Curley 15th (20342).

II. (£5.)—VISCOUNT PORTMAN, **Bryanston Amber** (6271), born 6th August, 1908; s Bryanston Ajax (5974), d Goldcup (19644), s d Major (4250).

CLASS 61.—*Devon Bull, calved in* 1909. [5 entries.]

I. (£10.)—C. MORRIS, Highfield Hall, St. Albans, Herts, **Highfield Noble** (6780), born 19th March; s Pound Bellringer (5617), d Graceful (16226), s d John Brown (3902).

II. (£5.)—VISCOUNT PORTMAN, Bryanston, Blandford, **Bryanston Admiral**, born 5th January; s Bryanston Ajax (5974), d Compton Total (19338), s d, Nobleman (2848).

III. (Bronze Medal.)—VISCOUNT PORTMAN, **Bryanston Pheasant**, born 28th February; s Bryanston Pitcher (5980), d Compton Quail (19915), s d Nobleman (2848).

CLASS 62.—*Devon Bull, calved in* 1910. [8 entries.]

I. (**£10.**)—C. MORRIS, Highfield Hall, St. Albans, Herts, **Highfield Victor** (Vol. xxxiv.), born 4th January; s Pound Lord Brassy 5th (5622), d Highfield Countess (21522), s d Pound Monarch (5089).

II. (**£5.**)—MRS. A. C. SKINNER & SON, Pound, Bishops Lydeard, **Lord Bob,** born 27th April, bred by R. L. Cornish, Pixford, Combe Florey; s Bean Planter (4139), d Daisy 8th (19948), s d Lord Palmerston (4438).

III. (**£2.**)—SIR G. A. H. WILLS, Bart., Northmoor, Dulverton, **Northmoor Royal Mail,** born 2nd January; s Northmoor Royal (5873), d Tottie (21136), s d Chairman (4362).

R.—VISCOUNT PORTMAN, Bryanston, Blandford, **Bryanston Goldseeker,** born 11th January; s Bryanston Golden Rod (5997), d Compton Rambler (22991), s d Overton Eclipse (5078).

SOUTH DEVON.

(The Prizes in Class 63 were given by the South Devon Herd Book Society).

CLASS 63.—*South Devon Cow, in-Milk, calved before* 1908. [2 entries.]

I. (**£10.**)—B. LUSCOMBE, Langston, Kingsbridge, born 30th March, 1904; s Masher (769), d Dairymaid 4th (4159), s d General Buller (1138).

II. (**£5.**)—BUTLAND BROS., Leigham, Plympton, Devon, **Fancy 2nd** (5822), born 28th June, 1904; s Leigham Champion (1667), d Fancy (4038), s d Cromer (969).

CLASS 64.—*South Devon Heifer, in-Milk, calved in* 1908. [1 entry.]

I. (**£10.**)—W. AND H. WHITLEY, Primley Farm, Paignton, Devon, **Primley Barmaid** (8841), born 5th January; s Merry Boy (1495), d Beauty 2nd (4501).

CLASS 65.—*South Devon Heifer, calved in* 1909. [5 entries.]

I. (**£10.**)—BUTLAND BROS., Leigham, Plympton, Devon, **Snowdrop 5th** (8972), born 25th February; s Good Sort (2378), d Snowdrop (4424), s d Happy Jack (874).

II. (**£5.**)—W. AND H. WHITLEY, Primley Farm, Paignton, Devon, **Primley Clematis** (9651), born 24th January; s What I Wanted (1388), d Grace (3303).

III. (**Bronze Medal.**)—B. LUSCOMBE, Langston, Kingsbridge, **Fidget 5th** (9261), born 4th January; s Challenger (1823), d Fidget 4th (6615), s d Big Ben (1593).

CLASS 66.—*South Devon Heifer, calved in* 1910. [4 entries.]

I. (**£10.**)—H. HAWKEN & SON, Okenbury, Kingston, Kingsbridge, **Dairymaid,** orn 6th January; s Ruler (3028), d Countess (7777), s d Elector (2354).

II. (£5.)—BUTLAND BROS., Leigham, Plympton, Devon, **Handsome 9th,** born 28th March; s Henry 7th (3178), d Handsome 4th (6956), s d Leigham Champion (1667).

III. (**Bronze Medal.**)—W. AND H. WHITLEY, Primley Farm, Paignton, Devon, **Primley Dora,** born 24th January; s Morning Star (2965), d Primley Alice (8185).

R.—W. AND H. WHITLEY, **Primley Dairymaid,** born 20th March; s Reindeer (2213), d Cherry 3rd (5818).

CLASS 67.—*South Devon Bull, calved in* 1907 *or* 1908. [2 entries.]

I. (£**10.**)—B. LUSCOMBE, Langston, Kingsbridge, **Leigham Sort** (3198), born 12th March, 1908, bred by Butland Bros., Leigham; s Lo Ben, d Handsome (4040), s d Big Ben (1593).

II. (**Silver Medal.**)—W. AND H. WHITLEY, Primley Farm, Paignton, **Primley Archduke** (2991), born 24th October, 1907: s Manager (2173), d Curly (4281).

CLASS 68.—*South Devon Bull, calved in* 1909. [1 entry.]

I. (£**10.**)—BUTLAND BROS., Leigham, Plympton, Devon, **Leigham Favourite,** born 27th April; s Dandy's Duke (2331), d Fancy 2nd (5822), s d Leigham Champion (1667).

CLASS 69.—*South Devon Bull, calved in* 1910. [3 entries.]

I. (£**10.**)—H. HAWKEN & SON, Okenbury, Kingston, Kingsbridge, **Doncaster** (3720), born 1st February, bred by E. B. Luscombe, Court Farm, Woodleigh, Loddiswell; s High House Prince (2917), d Myrtle (5463), s d Good Enough (1307).

II. (£**5.**)—W. AND H. WHITLEY, Primley Farm, Paignton, **Primley Defiance,** born 27th January; s What I Wanted (1388), d Primrose 2nd (4267).

III. (**Bronze Medal.**)—BUTLAND BROS., Leigham, Plympton, Devon, **Leigham Boy,** born, 1st May; s Henry 7th (3178), d Snowdrop (4424), s d Happy Jack (874).

SHORTHORN.

(The 1st Prize in Class 70 was given by the Shorthorn Society, and the 1st Prize in Class 71 by the Dairy Shorthorn (Coates' Herd Book) Association).

CLASS 70.—*Pedigree Shorthorn Dairy Cow, in-Milk, four years old and upwards on May* 31, *eligible for, and entered in Coates's Herd Book, or Pedigree sent for such entry previous to the Show, and not having previously won a similar prize given by the above-named Society or Association in* 1911, *milked in the ring before judging, under Conditions* 63. [8 entries.]

I. (£**10.**)—LORD ROTHSCHILD, Tring Park, Tring, Herts, roan, **Rosebud 7th,** born 29th January, 1907, bred by T. Hunter, Stone Row Head Farm, Lancaster; s Ingram's Chief (92034), d Rosebud 2nd (Vol. liv., p. 1,098), s d Silver King (77867).

II. (£5.)—S. SANDAY, Puddington Hall, Chester, roan, **Barrington Princess 4th,** born 13th August, 1905, bred by G. Taylor, Cranford Park, Middlesex; s Sir Barrington 5th (75642), d Barrington Duchess 25th, s d Duke of Wetherby 10th (68542).

R. & H.C.—LORD ROTHSCHILD, roan, **Cherry Blossom** (Vol. lvi., p. 1,902), born 13th April, 1906; s Rodney (89858), d Cherry Ripe (Vol. l., p. 582), s d Golden Cherry's Prince (70521).

CLASS 71.—*Pedigree Shorthorn Dairy Cow, in-Milk, under four years old on May* 31, *eligible for, and entered in Coates's Herd Book, or pedigree sent for such entry previous to the Show, and not having previously won a similar prize given by the above-named Society or Association in* 1911, *milked in the ring before judging, under Conditions* 63. [7 entries.]

I. (£10.)—LORD ROTHSCHILD, Tring Park, Tring, Herts, roan, **Fairy Duchess 33rd** (Vol. lv., p. 1,102), born 10th February, 1908; s Conjuror (91310), d Fairy Duchess 19th (Vol. l., p. 483), s d Scottish Beau (69552).

II. (£5.)—S. SANDAY, Puddington Hall, Chester, red and little white, **Queen of Hearts 2nd** (Vol. lv., p. 1,115), born 8th January, 1908; s Beau Furbelow (94254), d Queen of Hearts, s d Wild Duke of Geneva 245th (87714).

CLASS 72.—*Shorthorn Cow in-Milk, calved before* 1908. [9 entries.]

I. (£10.)—F. MILLER, La Belen, Clifton Road, Birkenhead, white, **Daisy's Queen,** born 16th May, 1907, bred by J. C. Toppin, Musgrave Hall, Penrith; s Imperial Crown (92029), d Daisy's Hope, s d Lord George (72876).

II. (£5.)—R. STRATTON, The Duffryn, Newport, roan, **Clarinda,** born 31st May, 1906, bred by C. D. Phillips, The Gaer, near Newport; s Great Mongol (88766), d Clara 3rd, s d Improved Rose (76900).

III. (£2.)—VISCOUNT TREDEGAR, Tredegar Park, Newport, Mon., dark roan, **Eralina,** born 5th April, 1906, bred by Alex Fair, Pratis Leven; s Broadhooks Conqueror (85451), d Ermine 2nd, s d Brave Archer (70018).

R.—VISCOUNT TREDEGAR, red, **Rosy Belle,** born 15th January, 1903, bred by B. Read, Cam, Dursley, Glos.; s Coral Beau (78634), d Rose of France 50th, s d Cameo (70086).

(The Prizes in Classes 73 and 74 were given by the Cardiff Local Committee).

CLASS 73.—*Pair of Shorthorn Cows, in-Milk or in-Calf, calved before* 1908, *the property of a resident in South Wales or Monmouthshire.* [2 entries.]

I. (£8.)—R. STRATTON, The Duffryn, Newport, roan, **Clarinda,** born 31st May, 1906, bred by C. D. Phillips, The Gaer, near Newport; s Great Mongol (88766), d Clara 3rd, s d Improved Rose (76900); and roan, **Rosamond 6th,** born 28th April, 1899, bred by Mrs. Handy, Hampen, Andoversford, Glos.; s Pegglesworth Captain (75206), d Rosamond 2nd, s d Canon Rolls 3rd (62258).

II. (**£4.**)—VISCOUNT TREDEGAR, Tredegar Park, Newport, Mon., red, **Rosy Belle,** born 15th January, 1903, bred by B. Read, Cam, Dursley, Glos.; s Coral Beau (78634), d Rose of France 50th, s d Cameo (70086); and dark roan **Eralina,** born 5th April, 1906, bred by Alex Fair, Pratis Leven; s Broadhooks Conqueror (85451), d Ermine 2nd, s d Brave Archer (70018).

CLASS 74.—*Shorthorn Heifer, under 3 years old, the property of a resident in South Wales or Monmouthshire.* [5 entries.]

I. (**£5.**)—VISCOUNT TREDEGAR, Tredegar Park, Newport, Mon., roan, **Augusta of Tredegar,** born 5th March, 1910; s Diamond Marksman (98598), d Tredegar Baroness Auricula, s d Baron Shipton (85288).

II. (**£3.**)—MRS. F. A. LORT-PHILLIPS, Glanarberth, Boncath, R.S.O., South Wales, red, **Lady Alcyone,** born 12th September, 1908; s Merry Monarch (103051), d Lady Ann 37th (Vol. liv.), s d Baron Bridekirk 26th (76092).

R. & H.C.—VISCOUNT TREDEGAR, red, **Maid of Tredegar 2nd,** born 20th March, 1910; s Diamond Marksman (98598), d Scarlet Runner, s d First Favor (85972).

C.—R. TEMPLETON, Pontcanna Farm, Cardiff, roan, **Lady Mary,** born 28th November, 1909; s Renown (93084), d Lady Charfield 42nd, s d Sir Barrington 5th (75642).

CLASS 75.—*Shorthorn Heifer in-Milk, calved in* 1908. [4 entries.]

I. (**£10.**)—R. CORNELIUS, Bankfields, Eastham, Cheshire, roan, **Rosaline 10th,** born 4th April, bred by W. Duthie, Tarves; s Achilles (93962), d Lady Rosaline, s d Caledon Chief (74163).

II. (**£5.**)—C. E. GUNTHER, Tongswood, Hawkhurst, Kent, roan, **Queen I 31st,** born 25th March, bred by W. James; s Janissary 5th (83779), d Queen I 1st, s d Vain Hampton (75804).

III. (**Bronze Medal.**)—MISS TALBOT, Penrice Castle, Reynoldston, Glam., red and white, **Leezzie Lindsay 4th,** born 17th September, 1908; s Penrice Gallant Prince (99914), d Leezzie Lindsay 3rd, s d Bapton Sceptre (82773).

CLASS 76.—*Shorthorn Heifer, calved in* 1909. [9 entries.]

I. (**£10.**)—R. CORNELIUS, Eastham, white, **Eastham Belle,** born 7th April, bred by W. T. Garne & Son, Aldsworth; s Village Beau (87631), d Aldsworth Phantom, s d Aldsworth Jasper (85147).

II. (**£5.**)—J. McCLYMONT REID, Cleeve Grange, Bishops Cleeve, Glos., roan, **Lady Ann 22nd,** born 5th March, bred by W. and J. W. Peterkin, Dunglass, Conan Bridge, Ross-shire; s Jim Sidey (99230), d Lady Ann 15th, s d Callynie Conqueror (78609).

III. (**£2.**)—W. T. GARNE & SON, Aldsworth, Northleach, R.S.O., Glos., red, **Village Lassie,** born 10th January; s Village Beau (87631), d Venitia, s d Royal Fame (87184).

R. & V.H.C.—R. J. BALSTON, Bilsington Priory, Ashford, Kent, roan, **Dewlap,** born 27th July; s Tehidy Robin Hood (97420), d Maydew, s d Rufus of Huntingtower.

H.C.—C. E. GUNTHER, Tongswood, Hawkhurst, Kent, roan, **Spicy Beauty**, born 8th January, bred by W. Anderson, Saphock; s Proud Emblem (100099), d SpicyBeauty 3rd, s d Archer's Pride (76038).

C.—MISS TALBOT, Penrice Castle, Reynoldston, Glam., roan, **Penrice Fairy**, born 26th September; s Golden Oriole (102377), d Leezzie Lindsay 3rd, s d Bapton Sceptre (82773).

CLASS 77.—*Shorthorn Heifer, calved in* 1910. [14 entries.]

I. (£10.)—W. T. GARNE & SON, Aldsworth, Northleach, R.S.O., Glos., roan, **Village Countess**, born 8th January; s Village Beau (87631), d Venitia, s d Royal Fame (87184).

II. (£5.)—W. T. GARNE & SON, white, **Village Lass**, born 23rd February; s Village Beau (87631), d Patient Lass, s d Aldsworth Pioneer (82701).

III. (£2.)—VISCOUNT TREDEGAR, Tredegar Park, Newport, Mon., roan, **Augusta of Tredegar**, born 5th March, 1910; s Diamond Marksman, (98598), d Tredegar Baroness Auricula, s d Baron Shipton (85288).

R. & H.C.—C. E. GUNTHER, Tongswood, Hawkhurst, Kent, roan, **Tongswood Edith**, born 21st January; s Spicy Hope, d Strawberry Dame, s d Prince Benedict (86904).

C.—VISCOUNT TREDEGAR, red, **Maid of Tredegar 2nd**, born 20th March, 1910; s Diamond Marksman (98598), d Scarlet Runner, s d First Favor (85972).—T. F. ROSKRUGE, Tehidy Barton, Camborne, Cornwall, roan, **Rosebriar**, born 2nd January; s Chief Justice (98382), d Rosewater, s d Sherborne Count (84762).

CLASS 78.—*Shorthorn Bull, calved in* 1907 *or* 1908. [8 entries.]

I. (£10) and **R.** for Champion*—F. MILLER, La Belen, Clifton Road, Birkenhead, roan, **Good Friday**, born 29th March, 1907, bred by J. Hope, Ireby Hall, Wigton; s Morning Sun (89384), d Tulip 37th, s d Ostorius (79512).

II. (£5.)—G. HARRISON, Gainford Hall, Darlington, roan, **Prince Olaf 2nd** (103410), born 5th March, 1908, bred by R. W. Bell, Windmill Farm, Coagh; s Prince Olaf (96353), d Broadhooks F. 3rd, s d Lord Roberts (83958).

III. (£2.)—VISCOUNT TREDEGAR, Tredegar Park, Newport, Mon., roan, **Pretender** (103343), born 18th January, 1908, bred by W. T. Garne & Son, Aldsworth; s Village Coronet (97548), d Patient Lass, s d Aldsworth Pioneer (82701).

R. & H.C.—J. McCLYMONT REID, Cleeve Grange, Bishops Cleeve, Glos., roan, **Keir Raider**, born 10th February, 1907, bred by Capt. A. Stirling, Keir, N.B.; s Lord Elgin (89117), d Keir Lady Ramsden (Vol. liv., p. 1,150), s d Rosicrucian (75483).

H.C.—R. STRATTON, The Duffryn, Newport, red, **Rustic** (103790), born 29th June, 1908, bred by H. Baker, Chedglow, Malmesbury, Wilts; s Village Pride (97554), d Pinafore 7th, s d Bapton Crown (78288).

C.—SIR H. RAPHAEL, Bart., M.P., Allestree Hall, Derby, roan, **Royal Star**, born 10th February, 1908, bred by A. Grug, Murton, King Edmard, N.B.; s Eastern Star (95049), d Royal Molly 1st (92292), s d Lord Erfril.

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* Given by the Shorthorn Society for the best Bull in Class 78, 79 or 80, entered in, or eligible for entry in, Coates's Herd Book.

CLASS 79.—*Shorthorn Bull, calved in* 1909. [7 entries.]

I. (**£10**) and Champion (**£10.**)*—C. E. GUNTHER, Tongswood, Hawkhurst, Kent, roan, **Tongswood Bamton,** born 19th January; s Bapton Yeoman, d Strawberry Dame, s d Prince Benedict (86904).

II. (**£5.**)—F. MILLER, La Belen, Clifton Road, Birkenhead, red, **Prospector,** born 4th March, bred by C. H. Jolliffe, Newbus Grange, Darlington; s Pride of Tees (96474), d Golden Wreath 15th, s d Golden Arrow (83583).

III. (**£2.**)—VISCOUNT TREDEGAR, Tredegar Park, Newport, Mon., red, **Scarlet Marksman** (Vol. lvii.), born 1st April; s Diamond Marksman (98598), d Scarlet Runner, s d First Favor (85972).

R. & H.C.—G. HARRISON, Gainford Hall, Darlington, red, **Rosemount Senator** (106856), born 1st April, bred by W. Bayne, Ballygoney, Moneymore; s Keir Senator (95594), d Golden Queen, s d Hope of Stewardstown (76882).

CLASS 80.—*Shorthorn Bull, calved in* 1910. [14 entries.]

I. (**£10.**)—F. MILLER, La Belen, Clifton Road, Birkenhead, roan, **Man o' War,** born 1st February, bred by J. C. Toppin, Musgrave Hall, Penrith; s Bletchly Lord (90934), d Mermaid, s d British Volunteer (85448).

II. (**£5.**)—J. MCCLYMONT REID, Cleeve Grange, Bishops Cleeve, Glos., roan, **Walton Robert,** born 24th January, bred by W. Hazell, Walton Grange, Aylesbury; s Robert Bruce (77661), d Avalanche 6th (Vol. liv., p. 775), s d Golden Hope (91859).

III. (**£2.**)—G. HARRISON, Gainford Hall, Darlington, roan, **Trump Card,** born 9th March, bred by Dr. R. M. Wilson, Tarty, Ellon; s Ballechin Type (85212), d Cluny Flora 96th, s d Clan Macdonald (78597).

R. & H.C.—LORD SHERBORNE, Sherborne Park, Northleach, R.S.O., Glos., red, **Marigold Duke,** born 21st February, bred by J. Marr, Uppermill, Tarves, Aberdeenshire; s Royal Leader (103727), d Marigold 61st, s d Vanderbilt (87618).

H.C.—C. E. GUNTHER, Tongswood, Hawkhurst, Kent, roan, **Wind Mill Marquis,** born 5th April, bred by R. W. Bell, Coagh, Co. Tyrone; s Aristocrat (104558), d Strowan Marchioness 10th, s d Cock Robin (80728).—R. STRATTON, The Duffryn, Newport, Mon., roan, **Mischief,** born 30th March, bred by W. T. Garne & Sons, Aldsworth, Northleach; s Pride of Ablington (103345), d Misfortune, s d Bapton Crown (78288).

C.—R. STRATTON, red, **Cardinal,** born 3rd April; s Prelate (99985), d Trilby 4th, s d Wiltshire Victor (71883).

HEREFORD.

CLASS 81.—*Hereford Cow, in-Milk, calved before* 1908. [3 entries.]

I. (**£10.**) and **R.** for Champion†—P. COATS, Sheepcote, Clifford, Herefordshire, **Ladybird 2nd,** born 2nd February, 1907; s Endale (21366), d Ladybird (Vol. xxxviii., p. 339), s d Bage Protector (21167).

* Given by the Shorthorn Society for the best bull in Class 78, 79 or 80, entered in or eligible for entry in Coates's Herd Book.

† Given by the Hereford Herd Book Society for the best Cow or Heifer in Classes 81 to 86.

II. (**£5.**)—W. B. TUDGE, Stepaside, Onibury, Salop, **Gwendoline**, born 28th October, 1906, bred by W. Tudge, Sawbridgeworth, Herts; s Commandant (22040), d Royal Daisy 5th (Vol. xxxvi., p. 654), s d Rhodesia (19044).

III. (**Bronze Medal.**)—EARL OF COVENTRY, Croome Court, Worcester, **Mistake** (Vol. xxxvi., p. 239), born 14th May, 1901; s Home Office (20073), d Misdelivery (Vol. xxxii., p. 297), s d Viscount (18648).

(The Prizes in Classes 82 and 83 were given by the Cardiff Local Committee).

CLASS 82.—*Pair of Hereford Cows, in-Milk or in-Calf, calved before* 1908, *the property of a resident in South Wales or Monmouthshire.* [2 entries.]

I. (**£8.**)—D. A. THOMAS, Llanwern, Newport, Mon., **Carnation** (Vol. xxxvii., p. 816, Vol. xl., p. 782), born 28th February, 1905, bred by Mrs. H. Williams, St. Mary's, Kingsland; s Lord Sutton (20162), d Dianthus, s d Diplomat (18328), ; and **Susannah** (Vol. xxxviii., p. 782), born 2nd January, 1906, bred by W. Thomas; s Perfection, d Gazelle 4th, s d Character (17762).

II. (**£4.**)—W. THOMAS, The Hayes, Sully, Cardiff, **Treasure**, born 29th July, 1900; s King John (20114), d Ringdove 4th, s d Standard (14194); and **Windley Blossom**, born 6th August, 1902; s Duke of Avondale (20954), d Victoria 3rd, s d Prairie Star (15567).

CLASS 83.—*Hereford Heifer, under* 3 *years old, the property of a resident in South Wales or Monmouthshire.* [4 entries.]

I. (**£5.**)—C. V. LLEWELLYN, Llysdinam, Newbridge-on-Wye, Radnorshire, **Ursa**, born 15th April, 1909; s Goldfinder (24638), d Russia, s d Ramdom (19668).

II. (**£3.**) W. THOMAS, Hayes Farm, Sully, Cardiff, **Lucky Star**, born 10th February, 1909; s Bendigo (26140), d Windley Blossom 3rd, s d Perfection (22450).

H.C.—D. A. THOMAS, Llanwern, Newport, Mon., **Happy Girl**, born 28th January, 1909, bred by J. H. Price, Abercray, Brecon; s Hampton (24056), d Alice (Vol. xl., p. 677), s d Kingswell (23544).

C.—W. THOMAS, **Roseleaf 3rd**, born 15th August, 1909; s Bendigo (26140), d Windley Blossom, s d Duke of Avondale (20594).

CLASS 84.—*Hereford Heifer, in-Milk, calved in* 1908. [3 entries.]

I. (**£10.**)—P. COATS, Sheepcote, Clifford, Herefordshire, **Ida**, born 20th February; s Fusilier (21402), d Isabella (Vol. xxxviii., p. 339), s d Endale (21366).

II. (**£5.**)—D. A. THOMAS, Llanwern Park, Newport, Mon., **Bonnie Belle** (Vol. xl., p. 791), born 4th January, bred by W. Thomas, Sully, near Cardiff; s Perfection (22450), d Gazelle (Vol. xxvi., p. 657), s d Royalist (14124).

III. (**Bronze Medal.**)—W. THOMAS, The Hayes, Sully, Cardiff, **Hilda 3rd**, born 27th February; s Bendigo (26140), d Hardy 3rd, s d Capitalist (18284).

CLASS 85.—*Hereford Heifer, calved in* 1909. [8 entries.]

I. (£10) and Champion **(£10)***—J. G. COOKE-HILL, Shelsley Bank, Stanford Bridge, Worcester, **Shelsley Primula**, born 27th January; s Shelsley (26480), d Primrose, s d Kinnersley King (20116).

II. (£5.)—G. L. JONES, Heath Grange, Worcester, **Ivington Beauty**, born 5th May, bred by R. Bright, Leominster; s Banquo (25126), d Bright's Oyster Girl (40266), s d Glencoe (17279).

III. (£2.)—J. D. D. EVANS, Ffrwdgrech, Brecon, **Ffrwdgrech Betty**, born 15th April: s Linacre (26257), d Bess (Vol. xxxviii., p. 406), s d Lord Kitchener (22974).

R. & H.C.—P. COATS, Sheepcote, Clifford, Herefordshire, **Pretty Jessie**, born 17th February; s Milton (25571), d Pretty Lass (Vol. xxxiii., p. 283), s d Prince Richard (17450).

H.C.—C. V. LLEWELLYN, Llysdinam, Newbridge-on-Wye, Radnorshire, **Ursa**, born 15th April, 1909; s Goldfinder (24638), d Russia, s d Ramdom (19668).—W. B. TUDGE, Stepaside, Onibury, Salop, **Dorothy Mary**, born 13th February, 1909; s Royal Prince (25734), d Gipsy Countess (Vol. xl., p. 807), s d Centrepiece (22774).

C.—W. H. B. CAVE, Wall End, Monkland, Leominster, Herefordshire, **Fairy Bright**, born 4th January, bred by R. Bright, Ivington Bury, Leominster; s Pyon General (23089), d Fairy (Vol. xxxviii, p. 299), s d Fine Lad (19414).

CLASS 86.—*Hereford Heifer, calved in* 1910. [12 entries.]

I. (£10.)—D. A. THOMAS, Llanwern Park, Newport, Mon., **Coalport**, born 19th January; s Rougement (20296), d Curly 56th (Vol. xl., p. 222), s d All Fours (22697).

II. (£5.)—G. DENNY, Byford Court, Hereford, **Eglantine**, born 2nd January; s Albatross (19193), d Briar Rose (Vol. xxxviii., p. 381), s d Rodney Stone (19692).

III. (£2.)—W. H. B. CAVE, Wall End, Monkland, Leominster, **Monkland Belle**, born 26th January; s Field Marshal (23429), d Bonnie Belle (Vol. xxxix., p. 288), s d Pagan (21647).

R. & V.H.C.—P. COATS, Sheepcote, Clifford, Herefordshire, **Dancing Girl**, born 3rd January; s Milton (25571), d Ladybird (Vol. xxxviii., p. 339), s d Bage Protector (21167).

V.H.C.—MRS. E. MEDLICOTT, Bodenham, S.O., Herefordshire, **Virginia 3rd**, born 26th February; s Locarno (20797), d Virginia (Vol. xl.), s d Lancer (21515).

H.C.—MRS. E. MEDLICOTT, **Sunlight 2nd**, born 11th March; s Locarno (20797), d Kitty 14th (Vol. xxxvi.), s d Blue Ruin (18713).

C.—G. BUTTERS, Hill House, Newton, Leominster, **Duchess**, born 15th January; s Sailor Prince (26465), d Echo (Vol. xxxvi., p. 198), s d Nelson (20885).—W. DAVIES, The Cefn Farm, Pontypridd, **Rosebud 4th**, born 25th February; s King Character 2nd (26239), d Rosebud (Vol. xxxv., p. 276), s d King Edward (22267).—H. J. DENT, Perton Court, Stoke Edith, Hereford, **Buttercup** (Vol. xlii.), born 6th February; s Coastguard (26748), d Butterfly 3rd (Vol. xli., p. 350), s d Peer (18006).

*** Given by the Hereford Herd Book Society for the Best Cow or Heifer in Classes 81 to 86.**

CLASS 87.—*Hereford Bull, calved in* 1907 *or* 1908. [4 entries.]

I. (£10) and Champion (**£10***)—P. COATS, Sheepcote, Clifford, Herefordshire, **Provost** (27125), born 7th February, 1908 ; s Fusilier (21402), d Douglas Pearl (Vol. xxxiii., p. 282), s d Endale Hero (188825).

II. (£5.)—R. T. HINCKES, Shetton, Mansell Lacy, Hereford, **Eaton Pearl** (26830), born 27th January, 1908, bred by C. T. Pulley, Lower Eaton, Hereford ; s Glendower 2nd (22169), d Lottie, s d Pioneer (14025).

III. (Bronze Medal.)—DE F. PENNEFATHER, Kinnersley Castle, Herefordshire, **Albert** (25896), born 9th March, 1907, bred by J. P. Prosser, Trevithel, Three Cocks, Breconshire ; s Albatross (Vol. xxxix., p. 19193), d Bellona (Vol. xxxv.), s d Bruce (18733).

R.—H. B. DAVIES, Crickmarren, Pembroke, **Pyon Prophet**, born 8th March, 1907, bred by W. T. Cooke, jun., Black Hall, King's Pyon, Weobley, Herefordshire ; s Professor (24894), d Twilight (Vol. xxxv., p. 170), s d Douglas (20583).

CLASS 88.—*Hereford Bull, calved in* 1909. [10 entries.]

I. (£10) and **R.** for Champion*—SIR J. R. G. COTTERELL, Bart., Garnons, Herefordshire, **Curfew** (27476), born 5th May ; s Royal Ringer (26458), d Curly 39th, s d Rose Cross 2nd (14865).

II. (£5.)—EARL OF COVENTRY, Croome Court, Worcester, **Dollymount** (27500), born 17th January ; s Challenger (26000), d Dolly (Vol. xxxvii., p. 335), s d Earl Marshal (22106).

III. (£2.)—A. P. TURNER, Leen, Pembridge, Herefordshire, **Montezuma** (27706), born 24th January ; s Lord Lieutenant (22323), d Moonwort, s d Parton (22440).

R. & V.H.C.—P. COATS, Sheepcote, Clifford, Herefordshire, **Budding Nod**, born 12th March ; s Aaron (25084), d Brunette Beauty (Vol. xxxv., p. 252), s d Gold Box (15339).

V.H.C.—S. C. HAYTER, Twyford, Pembridge, Herefordshire, **Dreadnought** (27504), born 4th January ; s Christmas Gift (125882), d Dot (Vol. xxxvi., p. 377), s d Bage Protector (21167).

C.—D. A. THOMAS, Llanwern Park, Newport, Mon., **North Star**, born 5th February ; s Pole Star (24872), d Snowflake (Vol. xxxviii., p. 779), s d Fine Lad (19414).

CLASS 89.—*Hereford Bull, calved in* 1910. [21 entries.]

I. (£10.)—J. TUDGE, Duxmoor, Craven Arms, Salop, **Cameron**, born 12th January, bred by Capt. E. L. A. Heygate, Buckland ; s Highland Prince (25437), d Ivy (Vol. xxxii., p. 428), s d Steelclad (17557).

II. (£5.)—J. G. COOKE-HILL, Shelsley Bank, Stanford Bridge, Worcester, **Shelsley Fusilier**, born 13th January ; s Shelsley (26480), d Matilda, s d Earl Marshal (22106).

* Given by the Hereford Herd Book Society for the best Bull in Classes 87 to 89.

III. (£2.)—J. G. Cooke-Hill, **Shelsley Primer**, born 17th January; s Shelsley (26480), d Primrose, s d Kinnersley King (20116).

R. & V.H.C.—de F. Pennefather, Kinnersley Castle, Herefordshire, **Newton John** (Vol. xlii.), born 8th January; s Albert (25896), d Rosebud 2nd (Vol. xxxvi., p. 448), s d Slaney (23162).

V.H.C.—G. Butters, Hill House, Newton, Leominster, **Sailor King**, born 31st January; s Sailor Prince (26465), d Lassie (Vol. xxxix., p. 285), s d Scot (23134).—A. P. Turner, Leen, Pembridge, Herefordshire, **Emissary**, born 14th January; s Cordial (26025), d Enchantress 2nd, s d Lord Lieutenant (22323).

H.C.—Earl of Coventry, Croome Court, Worcester, **Misanthrope**, born 9th January; s Lama (23550), d Mistake (Vol. xxxvi., p. 239), s d Home Office (20073).—G. Denny, Byford Court, Hereford, **Lascar**, born 6th January; s Albatross (19193), d Lavender (Vol. xlii.), s d Rodney Stone (19692).

C.—L. L. Moore, Brampton Brian, Herefordshire, **Brampton Dauntless**, born 6th January; s Eaton Sensation (24566), d Brampton Sunbeam 44th, s d Bonanza (21962).—C. T. Pulley, Lower Eaton, Hereford, **Eaton Ringleader**, born 4th January; s Eaton Masterpiece (25315), d Wavering, s d Gamecock (18370).—Ditto, **Eaton Ruler**, born 19th February; s Eaton Star (27520), d Lady Wilton 5th, s d Eaton Sensation (24566).—W. Thomas, The Hayes, Sully, Cardiff, **Pearl Cross**, born 2nd January; s Bendigo (26140), d Windley Blossom 3rd, s d Perfection (22450).

SUSSEX.

Class 90.—*Sussex Cow or Heifer, in-Milk, calved before* 1909. [2 entries.]

I. (£10) and Special*—W. G. Fladgate, Apsley, Thakeham, Pulborough, Sussex, **Apsley Fairy** (10757), born 19th January, 1906; s Silver King (2022), d Fairy (8818), s d Drungewick Prebble 2nd (1877).

II. (Silver Medal.)—W. A. Thornton, Lock, Partridge Green, Sussex, **Molly 3rd of Lock** (12124), born 2nd February, 1908; s Tutsham Toreador (2016), d Mayfield Molly 4th (7272), s d Young Goldfinder (1467).

Class 91.—*Sussex Heifer, calved in* 1909. [4 entries.]

I. (£10) and **R.** for Special*—J. Buchanan, Lavington Park, Petworth, **Lavington Nora 2nd**, born 17th January; s Shillinglee Gold 2nd (2194), d Apsley Nora (10144), s d Duke of Drungewick 3rd (1808).

II. (£5.)—J. Aungier, Lynwick, Rudgwick, Sussex, **Lynwick Paley Mabel** (12201), born 13th March; s Careless Earl (2300), d Paley Mabel (9266), s d Autocrat (2020).

III. (Bronze Medal.)—W. A. Thornton, Lock, Partridge Green, Sussex, **Darkey 8th of Lock** (12690), born 5th January; s Tutsham Toreador (2016), d Darkey A of Lock (11067), s d Prince of Drungewick 3rd (1810).

* Given by the Sussex Herd Book Society, a Silver Medal for the best Cow or Heifer in Class 90, 91 or 92.

R. & C.—W. G. FLADGATE, Apsley, Thakeham, Pulborough, Sussex, **Apsley Dina 2nd** (12352), born 23rd March; s Shillinglee Gold 5th (2337), d Broomham Dina (8781), s d Peacemaker 3rd (1869).

CLASS 92.—*Sussex Heifer, calved in* 1910. [7 entries.]

I. (£10.)—W. A. THORNTON, Lock, Partridge Green, Sussex, **Lock Betsy,** born 5th January; s Tutsham Toreador (2016), d Betsy 4th of Lock (11582), s d Prince of Drungewick 3rd (1810).

II. (£5.)—G. S. HARRIS, Hylands, Hailsham, Sussex, **Perfection of Hylands,** born 2nd January; s Shillinglee Gold 5th (2337), d Perfection (11272).

III. (Bronze Medal.)—J. AUNGIER, Lynwick, Rudgwick, Sussex, born 1st January; s Masterpiece (2330), d Anemone (10468), s d Friar's Preston (2088).

R. & H.C.—J. BUCHANAN, Lavington Park, Petworth, **Lavington Lollypop,** born 2nd January; s Shillinglee Gold 2nd (2194), d Shillinglee Lollipop 4th (9920), s d Bewbush (1943).

C.—W. T. FREMLIN, Milgate Park, Maidstone, Kent, **Milgate Buckthorn,** born 23rd March; s Paley Major (2059), d Buckthorn 3rd (10779), s d Mayfly Lord (2003).

CLASS 93.—*Sussex Bull, calved in* 1907, 1908, *or* 1909. [3 entries.]

I. (£10) and Special*—W. A. THORNTON, Lock, Partridge Green, Sussex, **Prince 2nd of Lock** (2499), born 6th January, 1908; s Tutsham Toreador (2016), d Penshurst Heedless (8549), s d Young Benares (1702).

II. (£5.)—W. T. FREMLIN, Milgate Park, Maidstone, Kent, **Birling Chris** (2482), born 5th March, 1908, bred by the Hon. R. P. Nevill, Birling Manor, Maidstone, Kent; s Paley Major (2059), d Birling Marigold (8596), s d Confidence 2nd (1630).

CLASS 94.—*Sussex Bull, calved in* 1910. [4 entries.]

I. (£10) and **R.** for Special*—G. S. HARRIS, Hylands, Hailsham, **Firelight of Hylands,** born 4th January; s Firelight (2325), d Apsley Lovely 3rd (11281).

II. (£5.)—W. A. THORNTON, Lock, Partridge Green, Sussex, **Lock Arab,** born 17th January; s Tutsham Toreador (2016), d Darkey A. of Lock (11067), s d Prince of Drungewick 3rd (1810).

III. (Bronze Medal.)—W. G. FLADGATE, Apsley, Thakeham, Pulborough, **Apsley Nimble,** born 27th January; s Apsley Liberty (2128), d Iris (8611), s d Gold Link of Mayfield (1593).

R.—J. AUNGIER, Lynwick, Rudgwick, Sussex, born 28th March; s Masterpiece (2330), d Paley Beauty (9267), s d Autocrat.

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* Given by the Sussex Herd Book Society, a Silver Medal for the best Bull in Class 93 or 94.

WELSH BLACK.

(£30 towards the Prizes in Classes 95 to 101 were given by the Welsh Black Cattle Society).

CLASS 95.—*Welsh Black Cow, in-Milk, calved before 1st December, 1907.* [1 entry.]

I. (**£10.**)—R. M. GREAVES, Wern, Portmadoc, **Wern Favourite** (736), born 20th March, 1906; s Wern Defender (45), d Molteno (395), s d Mafeking (460).

CLASS 96.—*Welsh Black Heifer, in-Milk, calved on or after 1st December, 1907.* [2 entries.]

I. (**£10.**)—R. M. GREAVES, Wern, Portmadoc, **Wern Honesty**, born 6th April, 1908; s Billy Bach (246), d Molteno (395), s d Mafeking (460).

II. (**Silver Medal.**)—THE COED COCH TRUSTEES, Llawes-y-Coed Farm, Abergele, **Madryn Sally 4th**, born 4th December, 1907, bred by the University College of North Wales, Bangor: s Madryn Mallard (298), d Madryn Sally 2nd (917).

CLASS 97.—*Welsh Black Heifer, calved on or after 1st December, 1908.* [2 entries.]

I. (**£7.**)—R. M. GREAVES, Wern, Portmadoc, **Wern Ibex**, born 21st June, 1909; s Duke of Wellington (294), d Modder (401), s d Mafeking (460 N.W.).

II. (**Silver Medal.**)—R. M. GREAVES, **Wern Ideal**, born 12th February, 1909; s Duke of Wellington (294), d Wern Bilberry (185), s d Wern Cawr (42).

CLASS 98.—*Welsh Black Heifer, calved on or after 1st December, 1909.* [2 entries.]

I. (**£7.**)—O. P. JONES, Plas Llechylched, Bryngwrau, Anglesey, **Plas Gwladys 2nd**, born 3rd December, 1909; s Plas Togo (249, Vol. ii.), d Plas Gwladys (318 Vol. i.), s d Goldfinder.

II. (**Silver Medal.**)—R. M. GREAVES, Wern, Portmadoc, **Wern Isabella**, born 10th December, 1909; s Wern Goalkeeper (333), d Wern Dusky (193), s d Tip (465).

CLASS 99.—*Welsh Black Bull, calved before 1st December, 1908.* [3 entries.]

I. (**£10.**)—O. P. JONES, Plas Llechylched, Bryngwrau, Anglesey, **Plas Togo** (249, Vol. ii.), born 2nd January, 1907: s Plas Lad, d Plas Susan.

II. (**£5.**)—R. M. GREAVES, Wern, Portmadoc, **Wern Gallant** (332), born 21st May, 1907; s Wern Emperor (50), d Wern Delilah (199), s d Tip (465).

III. (**Bronze Medal.**)—LORD ST. DAVIDS, Lydstep Haven, Penally, R.S.O., **Lydstep Vincent**, born 6th January, 1908; s Pembroke Boy (255), d May, s d Reality (188 Vol. v.).

CLASS 100.—*Welsh Black Bull, calved on or after 1st December,* 1908. [2 entries.]

I. (£10.)—R. M. GREAVES, Wern, Portmadoc, **Wern Inky,** born 20th March, 1909; s Duke of Wellington (294), d Molteno (395), s d Mafeking (460).

II. (**Silver Medal.**)—O. P. JONES, Plas Llechylched, Bryngwrau, Anglesey, **Plas Rentpayer** (360 Vol. iii.), born 12th March, 1909; s Plas Carwr (248), d Plas Daisy 3rd (316).

CLASS 101.—*Welsh Black Bull, calved on or after 1st December,* 1909. [3 entries.]

I. (£7.)—THE COED COCH TRUSTEES, Llawes-y-Coed Farm, Abergele, **Rhein-allt,** born 8th January, 1911; s Wern Emperor (50), d Madryn Sally 4th, s d Madryn Mallow (298).

II. (£5.)—R. M. GREAVES, Wern, Portmadoc, **Wern Joker,** born 20th March, 1910; s Duke of Wellington (294), d Glasfryn Grace (645), s d Wern Plum (467)

ABERDEEN-ANGUS.

(The 1st Prize in Class 102 was given by the English Aberdeen-Angus Cattle Association).

CLASS 102.—*Aberdeen-Angus Cow or Heifer, in-Milk, calved before 1st December,* 1908. [3 entries.]

I. (£10) and **Silver Medal***—G. DRUMMOND, Swaylands, Penshurst, Kent, **Beretta 2nd of Swaylands** (41959), born 13th January, 1907; s Eboniser (21782), d Beretta of Addington Park (31099), s d Kilgraston (15610).

II. (£5.)—J. J. CRIDLAN, Home Farm, Maisemore Park, Gloucester, **Exact of Preston** (41673), born 13th January, 1907, bred by the Rev. C. Bolden, Preston Bissett; s Publican of Preston (21178), d Exactly Right 2nd (38161), s d Beau of Addington Park (20127).

III. (**Bronze Medal.**)—G. D. FABER, C.B., M.P., Rush Court, Wallingford, **Rhona of Haynes** (40647), born 29th January, 1906, bred by the late W. B. Greenfield, Haynes Park, Bedford; s Royal Justice of Haynes (22664), d Rhona 3rd of Danesfield (35790), s d Danesfield Jester (18949).

CLASS 103.—*Aberdeen-Angus Heifer, calved on or after 1st December,* 1908. [2 entries.]

I. (£10.)—J. J. CRIDLAN, Home Farm, Maisemore Park, Gloucester, **Tulip of Standen** (45122), born 23rd February, 1909, bred by Captain Cookson, Chute, Standen, Wilts; s Elector of Benton (21814), d Crocus of Standen (37038), s d Elberton (20435).

* Given by the English Aberdeen-Angus Cattle Association, a Silver Medal, for the best Animal of opposite sex to that awarded the Gold Medal in Classes 102 to 106.

II. (**Silver Medal.**)—J. J. CRIDLAN, **Bright Maid of Maisemore** (45178), born 1st January, 1909; s Everwise (24436), d Ballista 5th (36507), s d Potiphar (19648).

CLASS 104.—*Aberdeen-Angus Heifer, calved on or after* 1st *December,* 1909. [6 entries.]

I. (**£10.**)—J. J. CRIDLAN, Home Farm, Maisemore Park, Gloucester, **Fill of Maisemore**, born 1st December, 1909; s Benedictine (25318), d Jennie of Standen (41808), s d Elector of Benton (21814).

II. (**£5.**)—G. DRUMMOND, Swaylands, Penshurst, Kent, **Charm of Swaylands** (Vol. xxxv.), born 16th January, 1910; s Gay Boy of Danesfield (21967), d Corksie 2nd of Swaylands (41961), s d Eboniser (21782).

III. (**£2.**)—G. D. FABER, C.B., M.P., Rush Court, Wallingford, **Etona of Rush Court** (47001), born 28th March, 1910; s Etonian (29238), d Ellesmere of Ardock, s d Eldritch (25517).

R.—J. J. CRIDLAN, **Blackbird 4th of Maisemore**, born 17th December, 1909; s Proud Erme (28602), d Blackbird 3rd of Maisemore (41856), s d Everwise (24436).

H.C.—J. J. CRIDLAN, **Vine of Maisemore**, born 24th December, 1909; s Everwise (24436), d Daisy Pride of Kinochtry (33578), s d Echador (16496).

CLASS 105.—*Aberdeen-Angus Bull, calved before* 1st *December,* 1909. [4 entries.]

I. (**£10**) and **Gold Medal***—J. J. CRIDLAN, Home Farm, Maisemore Park, Gloucester, **Rubelate of Maisemore** (28706), born 23rd December, 1907; s Ermelate (25576), d Ruby 2nd of Maisemore (38744), s d Wizard of Maisemore (21465).

II. (**£5**) and **R.** for Gold Medal*—G. DRUMMOND, Swaylands, Penshurst, Kent, **Wildgrave of Ballindalloch** (27653), born 28th December, 1906, bred by the late Sir G. Macpherson Grant, Ballindalloch, N.B.; s Everard of Ballindalloch (21902), d Wild Bergamot (37431), s d Delamere (13305).

III. (**Bronze Medal.**)—G. D. FABER, C.B., M.P., Rush Court, Wallingford, **Eligible of Ballindalloch** (29108), born 24th March, 1909, bred by Sir J. Macpherson Grant, Bart., Ballindalloch, N.B.,; s Jeshurun (19257), d Eliquia (35602), s d Delamere (13305).

R.—REV. C. BOLDEN, Preston Bissett, Buckingham, **Eagle Black** (26702), born 4th January, 1907; s Black Earl of Preston (24162), d Elga 8th (36878), s d Proud Duke of Ballindalloch (12031).

CLASS 106.—*Aberdeen-Angus Bull, calved on or after* 1st *December,* 1909. [3 entries.]

I. (**£10.**)—REV. C. BOLDEN, Preston Bissett, Buckingham, **Eloro** (30415), born 10th March, 1910, bred by J. Kennedy, Doonholm, Ayr; s Evarra (20507), d Eruca (34049), s d Mailbag (13637).

* Given by the Aberdeen-Angus Cattle Society, a Gold Medal, value £10, for the best Animal in Classes 102 to 106.

II (**£5.**)—J. J. CRIDLAN, Home Farm, Maisemore, Park, Gloucester, **Prince 2nd of Maisemore** (31108), born 20th January, 1910; s Everwise (24436), d Pride of Maisemore 2nd (38737), s d Wizard of Maisemore (21465).

III. (**Bronze Medal.**)—J. J. CRIDLAN, **Parthenian** (30980), born 17th January, 1910; s Monarch of Kent (28378), d Parthenia (38601), s d Dialist (21738).

JERSEY.

(The Prizes in Class 107 were given by the English Jersey Cattle Society).

CLASS 107.—*Jersey Cow or Heifer, in-Milk, entered in or eligible for entry in the English Jersey Herd Book, bred by Exhibitor, and sired in Great Britain or Ireland.* [13 entries.]

I. (**£5.**)—A. MILLER-HALLETT, Goddington, Chelsfield, Kent, whole, **Goddington Vanilla,** born 7th April, 1906; s Lenten Fare (8581), d Vanilla 2nd (Vol. xviii., p. 430), s d Hobby (7865).

II. (**£3.**)— J. H. SMITH BARRY, Stowell Park, Pewsey, Wilts, fawn, **Post Obit,** born 23rd March, 1904; s Gay Boy (7510), d Post Stamp 6th, s d Distinction's Crown (4818).

III. (**£2.**)—J. JOICEY, Poulton Priory, Fairford, Glos., whole, **Jurata,** born 23rd July, 1906; s Netina's Dairy Lad (8637), d Justitia, s d Chief Justice (7138).

R.—MRS. C. M. McINTOSH, Havering Park, Romford, Essex, whole, **Havering Carnatie 11th,** born 17th April, 1906; s Jolly Jim (8564), d Havering Carnatie 8th (Vol. xvii., p. 313).

H.C.—A. MILLER-HALLETT, whole, **Goddington Bagatelle 3rd,** born 26th April, 1908; s Goddington Raleigh (9246), d Goddington Bagatelle (Vol. xx., p. 317), s d Rover of Oaklands (8348). -SIR J. WERNHER, Bart., Luton Hoo, Luton, Beds, whole, **Carlsbad,** born 4th December, 1907; s King Henry (8571), d Cutnow, s d Bismarck's Boy (6786).

CLASS 108.—*Jersey Cow, in-Milk, calved before* 1908. [22 entries.]

I. (**£10.**)—R. B. WARD, Westwood, Droitwich, whole, **Mrs. Viola,** born 1st August, 1900, bred by J. Dobbel, Jersey; s Pomona's Glory, d Black Bess, s d King.

II. (**£5.**)—LORD ROTHSCHILD, Tring Park, Tring, Herts, whole, **Kenta** (Vol. xx., p. 346), born 6th March, 1905, bred by J. Grosvalet, St. Clement, Jersey; s General Fox 2nd (8889), d Pallas 2nd (9694 P.S.H.C.), s d Sovereign (7372).

III. (**£2.**)—A. MILLER-HALLETT, Goddington, Chelsfield, Kent, whole, **Goddington Vanilla,** born 7th April, 1906; s Lenten Fare (8581), d Vanilla 2nd (Vol. xviii., p. 430), s d Hobby (7865).

R.—J. H. SMITH-BARRY, Stowell Park, Pewsey, Wilts, fawn, **Post Obit,** born 23rd March, 1904; s Gay Boy (7510), d Post Stamp 6th, s d Distinction's Crown (4818).

V.H.C.—A. MILLER-HALLETT, whole, **Honey Lass,** born 11th July, 1906, bred by H. Lawford, St. Brelades, Jersey; s Shy Lad (3779), d Honeymoon 4th (11882), s d Napoleon Bonaparte (2745).

H.C.—J. JOICEY, Poulton Priory, Fairford, Glos., whole, **Jurata,** born 23rd July, 1906; s Netina's Dairy Lad (8637), d Justitia, s d Chief Justice (7138).—MRS. C. M. MCINTOSH, Havering Park, Romford, Essex, whole, **Havering Carnatie 11th,** born 17th April, 1906; s Jolly Jim (8564), d Havering Carnatie 8th (Vol. xvii., p. 313).—W. M. CAZALET, Fairlawne, Tonbridge, Kent, whole, **Ferula,** born 23rd April, 1905, bred by A. T. Le Cornu, St. Lawrence, Jersey.—C. THELLUSSON, Brodsworth Hall, Doncaster, whole, **Little Red Rose 6th** (Vol. xx., p. 361), born 26th February, 1906, bred by A. F. Neel; s Angres King (9134), d Little Red Rose (7922 P.S.C.), s d Golden Ferns Lad (6236).

C.—SIR J. WERNHER, Bart., Luton Hoo, Luton, Beds, whole, **Carlsbad,** born 4th December, 1907; s King Henry (8571), d Cutnow, s d Bismarck's Boy (6786).—J. DE KNOOP, Calveley Hall, Tarporley, broken fawn, **Seamless,** born 25th August, 1906, bred by E. Cabot, St. Clements; s Velveteen's Lad (3714), d Heartless (11952).

CLASS 109.—*Jersey Cow or Heifer, in-Milk, calved in* 1908. [11 entries.]

I. (£10.)—MRS. C. M. MCINTOSH, Havering Park, Romford, Essex, whole, **Briar Rose 3rd,** born 14th January, bred by Napper & Francis, St. Martin's, Jersey; s Jack of all Works, d Briar Rose 2nd.

II. (£5.)—A. MILLER-HALLETT, Goddington, Chelsfield, Kent, whole, **Goddington Bagatelle 3rd,** born 26th April, 1908; s Goddington Raleigh (9246), d Goddington Bagatelle (Vol. xx., p. 317), s d Rover of Oaklands (8348).

III. (£2.)—LORD ROTHSCHILD, Tring Park, Tring, Herts, whole, **Togo's Nicotine 2nd,** born 12th May, bred by P. W. Falle, Gronville, Jersey; s Campanile's Sultan (9524), d Togo's Nicotine (13105 P.S.H.C.), s d Admiral Togo (8774).

R.—J. DE KNOOP, Calveley Hall, Tarporley, **Little Duchess,** calved 25th January, bred by W. J. Mallett, St. Lawrence; s Lucy's Champion (3731), d River Belle (8273).

H.C.—LORD ROTHSCHILD, whole, **Mariposa's Lass,** born 8th January, bred by A. P. Le Rossignol, St. Lawrence, Jersey; s Plymouth Lad (9388), d Mariposa's Pet (12889 P.S.C.), s d Flower's Hero (8515).

CLASS 110.—*Jersey Heifer, in-Milk, calved in or since* 1909. [14 entries.]

I. (£10.)—LORD ROTHSCHILD, Tring Park, Tring, Herts, whole, **Aster,** born 25th March, 1909; s Catillon's Lad (9182), d Ardath (Vol. xx., p. 246), s d Aboukir's Boy (7406).

II. (£5.)—A. MILLER-HALLETT, Goddington, Chelsfield, Kent, whole, **Goddington Abbess,** born 19th April, 1909; s Good Night (4131), d Elsie's Abbess, s d Elsie's Fox (8503).

III. (£2.)—H. WALKER, Beach, Bitton, Glos., self, **Goddington Lottie 4th,** born 28th March, 1909, bred by A. Miller-Hallett, Goddington, Chelsfield, Kent; s Golden Noble (9611), d Goddington Lottie 3rd, s d Blue Sultan (8806).

R.—J. JOICEY, Poulton Priory, Fairford, Glos., broken, **Water Lily,** born 11th February, 1909 ; s Lord Alma (9972), d Lily of the Valley, s d Glorissa.

H.C.—J. DE KNOOP, Calveley Hall, Tarporley, whole fawn, **Sultana's Bride,** born 25th April, 1909, bred by F. J. Bannier, St. Helier's: s Bright Prince (4120), d Lady Sultana (13991).

CLASS 111.—*Jersey Heifer, calved in* 1910. [16 entries.]

I. (£10.)—W. M. CAZALET, Fairlawne, Tonbridge, Kent, whole, **Lissette,** born 20th June; s Felix (9579), d La Belle Agatha, s d Agatha's Flying Fox (7709).

II. (£5.)—W. M. CAZALET, whole, **Fragrance,** born 8th May; s Oakland's Glory (9370), d Fideles (F.S.C.).

III. (£2.)—MRS. C. M. MCINTOSH, Havering Park, Romford, Essex, whole, **Havering Primrose 5th,** born 27th March ; s Locket's Golden Lad, d Havering Primrose (Vol. xi., p. 258), s d Miout Gellier (4997).

R. LORD ROTHSCHILD, Tring Park, Tring, Herts, whole, **New Year's Beauty,** born 1st January, bred by W. C. Gruchy, Trinity, Jersey; s Royal Guide (10077), d Sixty (14517).

H.C. -A. POCOCK, Freegrove, Calne, Wilts, fawn, **Noble's Lily,** born 28th April: s Jesse's Noble (9644), d Sheriff's Lily (Vol. xxii.), s d Sheriff (9770).

CLASS 112.—*Jersey Bull, calved in* 1907 *or* 1908. [6 entries.]

I. (£10.)—A. MILLER-HALLETT, Goddington, Chelsfield, Kent, broken, **Goddington Winks,** born 31st July, 1908; s Honest Lad (3756), d Young Winks 4th, s d Flower's Hero (3502).

II. (£5.)—A. POCOCK, Freegrove, Calne, Wilts, dark fawn, **Prime Minister** (10052), born 28th March, 1908; s Barrister (8424), d Brown Fancy (Vol. xix., p. 262), s d Golden Jolly (7518).

III. (£2.) MRS. C. M. MCINTOSH, Havering Park, Romford, Essex, whole, **Locket's Golden Lad,** born 16th September, 1907, bred by P. Lucas, St. Martin's Jersey; s Rocket's Golden Lad (3856), d Locket's Welcome (9094).

R.—W. M. CAZALET, Fairlawne, Tonbridge, Kent, whole, **Felix,** born 28th May, 1908; s Oakland's Glory (9370), d Fideles (F.S.C.).

CLASS 113.—*Jersey Bull, calved in* 1909. [9 entries.]

I. (£10.)—A. POCOCK, Freegrove, Calne, Wilts, whole (dark), **Spanker,** born 6th April, bred by Captain Spicer, Spye Park, Chippenham: s Sheriff (9770), d Eileen (Vol. xv., p. 272), s d Bismarck's Boy (6786).

II. (£5.)—J. JOICEY, Poulton Priory, Fairford, Glos., whole, **Fairy's Duc,** born 6th April, bred by P. F. F. Ozouj, St. Saviour's, Jersey; s Raleigh's Fairy Boy (3851), d Highstead Duchess (10011), s d Raleigh's Duke (3717).

III. (£2.)—SIR J. WERNHER, Bart., Luton Hoo, Luton, Beds, whole, **China's Fairy Boy** (9869), born 14th April, bred by F. Le Marmel, St. John's; s Raleigh's Boy (3851), d China Plate (12224, P.S.H.C.), by Wonder Lad (9468).

R.—H. WALKER, Beach, Bitton, Glos., self, **Una's Fairy Boy**, born 18th April, bred by J. du Fresne, Trinity, Jersey: s Raleigh's Fairy Boy (3851), d Alfriston Una 2nd (13195).

H.C.—J. DE KNOOP, Calveley Hall, Tarporley, whole mulberry, **Derry's Jack**, born 16th March, bred by E. Billiot, St. Saviour's: s Derry's Golden Lad (3472), d Berthe 2nd (12468).—MRS. C. M. MCINTOSH, Havering Park, Romford, Essex, whole, **Aggie's Prince**, born 3rd August, bred by E. F. Alexander St. Mary's, Jersey; s Royal Guide (4104), d Aggie (13553).

CLASS 114.—*Jersey Bull, calved in* 1910. [17 entries.]

I. (£10.)—A. MILLER-HALLETT, Goddington, Chelsfield, Kent, whole, **Golden Chance's Noble**, born 20th April, bred by the Asylum Committee, St. Saviour's, Jersey: s Noble of Oaklands (3909), d Golden Chance 4th (11578).

II. (£5.)—A. POCOCK, Freegrove, Calne, Wilts, whole (dark), **Tweedledee** born 18th July: s Prime Minister (10052), d Florimonda (Vol. xx., p. 309), s d Florimond (8183).

III. (£2.)—LORD ROTHSCHILD, Tring Park, Tring, Herts, whole, **Halley**, born 4th April, bred by W. Alexander, St. Mary's, Jersey; s Noble's Jolly Sultan (10022), d Golden Queen 5th (14653), s d Sultan of Oaklands (9082).

R.—SIR J. FULLER, Bart., Jaggard's Farm, Corsham, Wilts, whole, **Brown Boy**, born 27th March; s Post Boy (10049), d Brown Fancy (Vol. xix., p. 262), s d Golden Jolly (7518).

V.H.C.—J. DE KNOOP, Calveley Hall, Tarporley, grey mulberry, **Violette's Laddie**, born 7th February, bred by N. du Feu, jun., Trinity; s Plymouth Lad (3922), d Ma Violette (10406).

H.C—MRS. EVELYN, Wotton House, Dorking, whole, **Wotton Narcissus**, born 24th May; s Layman (9667), d Jonquil (Vol. xix., p. 329), s d John Bull 8243).—MRS. C. M. MCINTOSH, Havering Park, Romford, Essex, grey, **Lemberg**, born 28th May, bred by Napper & Francis, St. Martin's, Jersey; s Rozel's Sulton (4140 J.H.B.), d Briar Rose 3rd (14857 J.H.B.).

GUERNSEY.

CLASS 115.—*Guernsey Cow, in-Milk, calved before* 1908. [4 entries.]

I. (£10.)—SIR E. A. HAMBRO, Hayes Place, Hayes, Kent, fawn, **Hayes Olive**, born 8th June, 1903; s Merry Auton, d Olive Branch.

II. (£5.)—J. C. FORSTER, Clatford Mills, Andover, red and white, **Ma Charmante 2nd**, born 2nd June, 1899, bred by J. Bourgaize, St. Saviour's; s His Majesty 1st, d Ma Charmante.

III. (Bronze Medal.)—J. P. MORGAN, Dover House, Roehampton, fawn and white, **Blanc's Bois Lily 1st** (7166, Vol. xxvi.), born 23rd June, 1907; s Bristol (1547 Vol. xx.), d Blanc's Bois Lily (5733).

CLASS 116.—*Guernsey Heifer, in-Milk, calved in* 1908. [4 entries.]

I. (£10.)—J. C. FORSTER, Clatford Mills, Andover, light red and white, **Clatford Fay of the Mill,** born 2nd June, bred by J. P. Gallichan, Victoria Street, Alderney; s Chieftain, d Betty.

II. (£5.)—J. C. FORSTER, red and white, **Clatford Meadow Sweet,** born 8th March, bred by J. P. Gallichan, Victoria Street, Alderney; s Chieftain, d Judy.

III. (Bronze Medal).—SIR E. A. HAMBRO, Hayes Place, Hayes, Kent, fawn and white, **Hayes Felois 5th,** born 11th May; s King Cup, d Hayes Felois 4th.

R. & C.—MRS. R. C. BAINBRIDGE, Elfordleigh, Plympton, fawn and white, **Elfordleigh Lowly,** born 4th February; s Elfordleigh Rival (1823), d Elfordleigh Lassie (6497), s d Plucky (1700).

CLASS 117.—*Guernsey Heifer, calved in* 1909. [5 entries.]

I. (£10) and **R.** for Champion* COL. H. W. SHAKERLEY, Enham Place, Andover, light fawn, **Bonnie Nuit 3rd** (7995), born 11th June: s Dick of Carteret (1815), d Bonnie Nuit (7170).

II. (£5.)—G. F. FERRAND, Hawkley Hurst, Liss, Hants, fawn and white, **Hawkley Golden Rose,** born 8th December, bred by C. W. Browning, Les Mourants, St. Andrew's, Guernsey: s Gay Lad du Brave, d Golden Rose.

III. (Bronze Medal.)—G. F. FERRAND, fawn and white, **Hawkley Jessie,** born 10th November, bred by O. de L. Robilliard, Grandes Capelles, St. Sampson's, Guernsey; s Galaxy's Sequel, d Jessie 16th.

R. & C. W. H. N. GOSCHEN, Durrington House, Harlow, Essex, red and white, **Durrington Cowslip** (E.G.C.S. 8044), born 17th March; s King's Moor Governor (1952), d Ruth (7096), s d Dunans (1459).

CLASS 118.—*Guernsey Heifer, calved in* 1910. [9 entries.]

I. (£10.)—J. C. FORSTER, Clatford Mills, Andover, fawn and white, **Clatford Meadow Sweet 2nd,** born 9th March, bred by J. P. Gallichan, Victoria Street, Alderney; s Prince, d Judy.

II. (£5.) and Champion* J. P. MORGAN, Dover House, Roehampton, fawn and white, **Lady Jebbe 2nd,** born 5th July; s Clatford Comte de Paris (1812, Vol. xxiii.), d Lady Jebbe 1st (7341), Vol. xxiv.), s d Coronation King 3rd (1739, Vol. xxii).

III. (£2.)—J. P. MORGAN, fawn and white, **Rose of the Effards 3rd,** born 26th March; s Clatford Comte de Paris (1812, Vol. xxiii.), d Rose of the Effards (7454, Vol. xxiv.), s d Royal Blood 6th (1261, P.S., R.G.A.S.).

R. & V.H.C.—COL. H. W. SHAKERLEY, Enham Place, Andover, light red, **Rose of Enham,** born 30th July; s Victor des Hougues Magues (2108), d Rose of Glehlands (7843).

* Given by the English Guernsey Cattle Society, a Cup, value £5, for the best Cow or Heifer in the Guernsey Classes, bred in England, and entered, or eligible for registry, in the E.G.C.S. Herd Book.

H.C.—MRS. R. C. BAINBRIDGE, Elfordleigh, Plymton, fawn and white, **Elfordleigh Jane 5th,** born 23rd August; s Bijou's Sequel (1905), d Jane 2nd (3771), s d Gulishan (10101 P.S., R.G.A.S.).

CLASS 119.—*Guernsey Bull, calved in* 1907 *or* 1908. [5 entries.]

I. (£10.)—SIR E. A. HAMBRO, Hayes Place, Hayes, Kent, red and white, **Guiding Star of Les Belles,** born 30th October, 1908, bred by W. J. Ray, Les Belles, St. Saviour's; s Golden Noble 2nd, d Fanny of Guelbort.

II. (£5.)—J. P. MORGAN, Dover House, Roehampton, fawn and white, **Polo 3rd of the Vauxbelets** (2174, Vol. xxv.), born 20th January, 1908, bred by J. Hunault, Les Vauxbelets, St. Andrew's, Guernsey; s Pride of Day (1849, P.S., R.G.A.S.), d Beauty Pearl 3rd of the Vauxbelets (6258 P.S., R.G.A.S.).

III. (Bronze Medal.)—COL. H. W. SHAKERLEY, Enham Place, Andover, Hants, light red, **Victor des Hougues Magues** (2108), born 25th September, 1907, bred by E. Robin, Hougues Magues, St. Sampson, Guernsey; s Galaxy's Sequel (1539 P.S., R.G.A.S.), d Flora des Hougues Magues (3039 F.S., R.G.A.S.)

R. & V.H.C.—G. F. FERRAND, Hawkley Hurst, Liss, Hants, golden fawn, **Knight of Hawkley** (2159), born 29th May, 1908, bred by Sir H. D. Tichborne, Tichborne Park, Alresford, Hants; s Itchen Wrangler, d Itchen Pearl 3rd, s d Golden Secret.

CLASS 120.—*Guernsey Bull, calved in* 1909. [3 entries.]

I. (£10.)—G. F. FERRAND, Hawkley Hurst, Liss, Hampshire, fawn and white, **Chieftain of Hawkley,** born 14th December, bred by P. Mahy, Pulias, St. Sampson's, Guernsey; s Galaxy's Sequel, d Dolly of Pulias.

II. (£5.)—J. P. MORGAN, Dover House, Roehampton, fawn and white, **Croesus,** born 7th May, bred by Col. J. E. Le Mottie, Le Vanquiedor; s Lord Mar (1737 P S., R.G.A.S.), d Flora 20th of the Vanquiedor (6594 P.S., R.G.A.S.)

III. (Bronze Medal.)—COL. H. W. SHAKERLEY, Enham Place, Andover, red, **Raymond of the Vrangue** (2425 P.S., R.G.A.S.), born 13th June, bred by J. Sherwill, St. Peter's Port, Bresdin, Guernsey; s Raymond of the Priel 6th, d Nelly of the Vrangue

CLASS 121.—*Guernsey Bull, calved in* 1910. [7 entries.]

I. (£10.)—SIR E. A. HAMBRO, Hayes Place, Hayes, Kent, fawn and white, **Hayes Gay 2nd,** born 17th July; s Gay Boy, d Hartfield Lass 3rd.

II. (£5.)—J. P. MORGAN, Dover House, Roehampton, fawn and white, **Roehampton Comte de Paris 2nd,** born 27th April; s Clatford Comte de Paris (1812, Vol. xxiii.), d Lily of the Preel (5532, Vol. xix), s d King Edward (1291 P.S., R.G.A.S.).

III. (£2.)—SIR E A. HAMBRO, fawn and white, **Hayes Prime Minister,** born 16th April; s Hayes Coronation 2nd, d Hayes Olive.

R. & V.H.C.—W. H. N. GOSCHEN, Durrington House, Harlow, Essex, red and white, **President of Mt. Plaisant** (2355, E.G.C.S.), born 10th March, bred by E. E. Falla, Mt. Plaisant, Castel, Guernsey; s President (2020 P.S., R.G.A.S.), d Nell 2nd of Mt. Plaisant (3640 F.S., R.G.A.S.).

H.C.—MRS. R. C. BAINBRIDGE, Elfordleigh, Plympton, orange and white, **Raymond's Joe** (2632 P.S.), born 30th April; s Raymond of the Priel 4th (1911 P.S.), d Bon Esvoir 9th (4545 P.S.).

KERRY.

CLASS 122.—*Kerry Cow or Heifer, in-Milk, calved in or before* 1908. [3 entries.]

I. (**£10**) and Special*—LADY GREENALL, Walton Hall, Warrington, **Fenella** (3005), born 8th May, 1899, bred by the late Earl of Clonmel, Bishopcourt, Ireland; s Gort Chieftain (204), d Bishopcourt Christina 3rd (2012), s d Gort Chieftain (204).

II. (**£5.**)—T. WAITE, Highlands, Redhill, Surrey, **Duv Granny** (3389), born 8th February, 1905, bred by J. Neill, Killarney; s Killeagy (550), d Duv Divine (3231).

III. (**Bronze Medal**).—T. WAITE, **Duv Darling 2nd** (3492), born 1st June, 1907, bred by J. Neill, Killarney; s Duv Daniell (590), d Duv Darling (3236).

CLASS 123.—*Kerry Heifer calved in* 1909 *or* 1910. [2 entries.]

I. (**£10.**)—LADY GREENALL, Walton Hall, Warrington, **Walton Feather,** born 1909.

CLASS 124.—*Kerry Bull, calved in* 1908, 1909, *or* 1910. [3 entries.]

I. (**£10.**)—LADY GREENALL, Walton Hall, Warrington, **Maeldum** (666), born 8th April, 1908, bred by Mrs. Madden, Nutley, Booterstown, Ireland; s Ptarmigan (646), d Morna 7th (3246).

II. (**£5**) and **R.** for Special*—T. WAITE, Highlands, Redhill, Surrey, **Kilmorna Duke 17th** (667), born 12th January, 1908, bred by G. Gun Mahony, Kilmorna; s Kilmorna Duke 9th (624), d Kilmorna Primrose 2nd (3356), s d Gort Sheen (475).

III. (**Bronze Medal.**)—THE MARQUIS OF LANSDOWNE, K.G., Bowood Park, Calne, Wilts, **Prime Minister,** born 8th May, 1909; s Moat King (164), d La Mancha Colleen (364).

DEXTER KERRY.

CLASS 125.—*Dexter Kerry Cow or Heifer, in-Milk, calved in or before* 1908. [8 entries.]

I. (**£10.**)—HON. MRS. C. PORTMAN, Goldicote, Stratford-on-Avon, red, **La Mancha Hard to Find** (1238), born 9th April, 1904, bred by R. T. Robertson, Malahide, Co. Dublin; s La Mancha What Next (279), d La Mancha Dolly Daydream (1185).

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* Given by B. de Bertodano, Esq., for the best Animal in Class 122, 123 or 124, to which the Cup has not previously been awarded, the Bertodano Challenge Cup, value 25 guineas. The Cup to become the property of an Exhibitor winning it three years in succession.

II. (**£5**) and **R.** for Special*—H. M. Gibbs, Barrow Court, near Bristol, black, **Barrow Duchess 3rd,** born 29th June, 1907; s Brockhampton Count, d Barrow Duchess 2nd, s d Compton Dan.

III. (**£2.**)—B. de Bertodano, Cowbridge House, Malmesbury, Wilts, black, **Cowbridge Dainty Maid** (H.B. 1643), born 12th March, 1908; s Cowbridge Xit (H.B. 291), d Cowbridge Dainty Dish (H.B. 1261).

R. & V.H.C.—Hon. Mrs. C. Portman, black, **Souvenir** (1635), born 1906.

H.C.—H. M. Gibbs, black, **Barrow Bracelet,** born 1908.—G. Habgood, Harley Lodge, Wimborne, black, **Harley Coy** (1655), born 11th May, 1907; s Kingwood Comely Boy (264), d Harley Signorina (1145), s d Great Malvern (178).

Class 126.—*Dexter Kerry Heifer, calved in* 1909 *or* 1910. [7 entries.]

I. (**£10.**)—Hon. Mrs. C. Portman, Goldicote, Stratford-on-Avon, black, **Wee Child,** born 1909.

II. (**£5.**)—B. de Bertodano, Cowbridge House, Malmesbury, Wilts, black, **Cowbridge Ivy** (Vol. xii.), born March, 1909.

III. (**£2.**)—Rev. R. L. Simkin, Down Ampney Vicarage, Cricklade, red, **Oakridge Queen,** born 10th April, 1909, bred by Col. Stallard, St. John's House, Worcester; s Oakridge Rox (366), d Oakridge Dumpling (1532).

H.C.—H. M. Gibbs, Barrow Court, near Bristol, black, **Barrow Emerald 2nd,** born 6th October, 1909; s Barrow Captain, d Barrow Emerald.—Ditto, ditto, black, **Barrow Buttercup 2nd,** born 4th June, 1909; s Barrow Count, d Barrow Buttercup.—G. Habgood, Harley Lodge, Wimborne, black, **Harley Caramel,** born 23rd March, 1909; s Wyndthorpe Gentian (343), d Harley Cocoa Nut (1656).—Mrs. E. Morant, Brokenhurst Park, Hants, black, **Hayward Kenmare,** born 9th November, 1909, bred by the late E. J. Morant, Brokenhurst Park, Hants; s Doreen Punchbowl (357), d Wyndthorpe Molly (1546), s d Don Gentian (244).

Class 127.—*Dexter Kerry Bull, calved in* 1908, 1909 *or* 1910. [7 entries.]

I. (**£10.**)—B. de Bertodano, Cowbridge House, Malmesbury, Wilts, black, **Cowbridge Hero** (Vol. xii.), born March, 1909.

II. (**£5.**)—H. M. Gibbs, Barrow Court, near Bristol, black, **Barrow Bandit,** born 1909.

III. (**£2.**)—H. M. Gibbs, black, **Barrow Bacchus,** born 9th April, 1909; s Malvern Toper, d Barrow Pansy.

R. & V.H.C.—Hon. Mrs. C. Portman, Goldicote, Stratford-on-Avon, black **La Mancha Wee Topper,** born 1908, bred by R. T. Robertson, Malahide, Co. Dublin.

H.C.—G. Habgood, Harley Lodge, Wimborne, black, **Harley Conqueror** (434), born 14th May, 1909; s Wyndthorpe Gentian (343), d Harley Coy (1655), s d Kingwood Comely Boy (264).

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* Given by the English Kerry and Dexter Cattle Society, the Devonshire Challenge Cup, for the best Animal in Classes 125 to 128, bred by Exhibitor, and entered in or eligible for the English Kerry and Dexter Herd Book. The Cup to be won by the same Exhibitor with different animals three years in succession before becoming his absolute property.

The Prizes in Class 128 were given by the English Kerry and Dexter Cattle Society).

CLASS 128.—*Dexter Kerry Bull, calved in* 1910, *whose sire and dam were entered in the English Kerry and Dexter or Royal Dublin Society's Herd Book.* [7 entries.]

I. (£10) and Special*—HON. MRS. C. PORTMAN, Goldicote, Stratford-on-Avon, black, **Shamrock,** born 29th April; s Galtee More (517), d Souvenir (1634).

II. (£6.)—H. M. GIBBS, Barrow Court, near Bristol, black, **Barrow Conqueror,** born 13th April; s Barrow Count, d Barrow Bracelet.

III. (£4.)—B. DE BERTODANO, Cowbridge House, Malmesbury, Wilts, black, **Cowbridge Knight** (Vol. xii.), born 7th August; s Cowbridge Snowboy (H.B. 404), d Cowbridge Kitty (H.B. 1264).

R. & V.H.C.—B. DE BERTODANO, black, **Cowbridge Ivor** (Vol. xii.), born 1st August; s Cowbridge General (H.B. 385), d Cowbridge Ena (H.B. 1383), s d Little Ivor (H.B. 336).

H.C. REV. R. L. SIMKIN, Down Ampney Vicarage, Cricklade, black, **Oakridge Pilot,** born 8th January; s Barrow Count (383), d Oakridge Pearl (1533).

C.—H. M. GIBBS, black, **Barrow Colonel,** born 4th June; s Barrow Captain, d Barrow Irish Duchess.—MRS. F. E. WITHINGTON, Danebury, Stockbridge, Hants, red, **Rubio,** born 13th April; s Manifesto (417), d Shannon Lass (1721).

DAIRY.

(The Prizes in Classes 129 and 130 were offered by the Cardiff Local Committee).

CLASS 129.—*Pair of Cows of any Breed, in full profit, the property of a resident in South Wales or Monmouthshire. First prize,* £8 —*second,* £4.

[NO ENTRY.]

CLASS 130.—*Cow of any Breed, in full profit, the property of a resident in South Wales or Monmouthshire. First prize,* £5—*second,* £2.

[NO ENTRY.]

CLASS 131.—*Cow, in-Milk, of any breed or cross, under* 900 *lbs. live weight, yielding the largest quantity of milk, of normal character, containing at each time of milking* 12 *per cent. of total solids, of which not less than* 3 *per cent. shall be fat, the period of lactation being taken into consideration.* [16 entries.]

I. (£10.)—J. H. SMITH-BARRY, Stowell Park, Pewsey, Wilts, Jersey, **Caprice,** born 28th July, 1905; s Oxford Sunbeam (8650), d Captious, s d Geonnais Lad (6562). (Last calf January 8, 1911.)

* Given by the English Kerry and Dexter Cattle Society, the Devonshire Challenge Cup, for the best Animal in Classes 125 to 128, bred by Exhibitor, and entered in or eligible for the English Kerry and Dexter Herd Book. The Cup to be won by the same Exhibitor with different animals three years in succession before becoming his absolute property.

II. (**£5.**)—R. B. WARD, Westwood, Droitwich, broken Jersey, **Ida 5th,** born 2nd September, 1905, bred by Lord Blyth; s Buonespoir, d Ida 3rd, s d Reviver. (Last calf November 27, 1910).

III (**£2**)—J. H. SMITH-BARRY, fawn, Jersey, **Malvoisie,** born 12th August, 1905; s Gay Boy (7510), d Madeira 7th, s d Reminder's Invention (7643). (Last calf December 6, 1910.)

R. & C.—A. POCOCK, Freegrove, Calne, Wilts, grey fawn, **Freegrove Lilly** (Vol. xix., p. 305), born 5th January, 1905; s Speculative (8376), d Lily Gold (Vol. xvii., p. 341), s d Muriel's Golden Lad (7610.) (Last calf March 28, 1911.)

C.—DAME E. F. SMYTH, Ashton Court, Bristol, whole, **Walcombe Starstone** (Vol. xv., p. 408), born 13th June, 1901, bred by — Arney, Draycott, Cheddar; s Turquoise (6737), d Starstone (Vol. xi., p. 327), s d Count Lulu (5512). (Last calf January 23, 1911.)—J. JOICEY, Poulton Priory, Fairford, Glos., whole, **Jurata,** born 23rd July, 1906; s Netina's Dairy Lad (8637), d Justitia, s d Chief Justice (7138).

CLASS 132.—*Cow, in-Milk, of any breed or cross,* 900 *lbs. live weight or over, yielding the largest quantity of milk of normal character, containing at each time of milking* 12 *per cent. of total solids, of which not less than* 3 *per cent. shall be fat, the period of lactation being taken into consideration.* [16 entries.]

I. (**£10.**)—G. W. STARK, Forge Farm, Caerleon, red and white cross, **Nancy,** born 21st April, 1902, bred by S. H. Baker, Lodge Farm, Caerleon. (Last calf January 14, 1911).

II. (**£5.**)—J. EVENS, Burton, Lincoln, Lincoln Red Shorthorn, **Burton Amy,** born March, 1902, bred by S. Crawley, Hemington; s Glorious (2523), d Amy, s d Lord Chancellor (1606). (Last calf April 16, 1910).

III. (**£2.**)—LORD ROTHSCHILD, Tring Park, Tring, Herts, whole, **Catherine,** born 1st March, 1906, bred by P. Le Riche, Trinity, Jersey; s Benedictine's Jockey (9146), d Fair Maiden (10314 P.S.H.C.). s d Peacemaker (7955). (Last calf January 17, 1911).

R. & H.C.—LORD ROTHSCHILD, whole, **Kenta** (Vol. XX., p. 346), born 6th March, 1905, bred by J. Grosvalet, St. Clement, Jersey; s General Fox 2nd (8889), d Pallas 2nd (9694 P.S.H.C.), s d Sovereign (7372).

BUTTER TEST.

(The Prizes in Class 133 were given by the English Jersey Cattle Society, and entries in them were subject to any conditions issued by that Society previous to the tests).

CLASS 133.—*Cow, eligible for or entered in the English Jersey Herd Book, obtaining the greatest number of points by the practical test of the separator and churn, judged by the scale of points adopted by the English Jersey Cattle Society.*

Certificates of Merit were awarded to Cows reaching the E.J.C.S. Standard of Merit.

I. (**Gold Medal** or **£10.**)—LORD ROTHSCHILD, Tring Park, Tring, Herts, whole, **Catherine,** born 1st March, 1906, bred by P. Le Riche, Trinity, Jersey; s Benedictine's Jockey (9146), d Fair Maiden (10314 P.S.H.C.), s d Peacemaker (7955). (Last calf January 17, 1911).

II. (**Silver Medal** or **£5.**)—J. H. SMITH-BARRY, Stowell Park, Pewsey, Wilts, fawn Jersey, **Malvoisie,** born 12th August, 1905; s Gay Boy (7510), d Madeira 7th, s d Reminder's Invention (7643). (Last calf December 6, 1910.)

III. (**Bronze Medal** or **£3.**)—J. H. SMITH-BARRY, Jersey, **Caprice,** born 28th July, 1905; s Oxford Sunbeam (8650), d Captious, s d Geonnais Lad (6562). (Last calf January 8, 1911).

Special* and **Certificate.**—DAME E. F. SMYTH, Ashton Court, Bristol, whole, **Walcombe Starstone** (Vol. xv., p. 408), born 13th June, 1901, bred by — Arney, Draycott, Cheddar; s Turquoise (6737), d Starstone (Vol. xi., p. 327), s d Count Lulu (5512). (Last calf January 23, 1911.)

Certificates.—J. H. SMITH-BARRY, fawn, **Post Obit,** born 23rd March, 1904; s Gay Boy (7510), d Post Stamp 6th, s d Distinction's Crown (4818). (Last calf February 8, 1911.)—A. POCOCK, Freegrove, Calne, Wilts, grey fawn, **Freegrove Lily** (Vol. xix., p. 305), born 5th January, 1905; s Speculative (8376), d Lily Gold (Vol. xvii., p. 341), s d Muriel's Golden Lad (7610). (Last calf March 28, 1911.)—MRS. EVELYN, Wotton House, Dorking, whole Jersey, **Record 3rd,** born 7th October, 1906, bred by R. G. Arthur, Jersey; s Astor (I.H.B. 3042), d Record (9241). (Last calf March 12, 1911).

SHEEP.

COTSWOLD.

(£11 towards the Prizes in Classes 134 to 136 were contributed by members of the Cotswold Sheep Breeders' Society).

CLASS 134.—*Cotswold Shearling Ram.* [6 entries.]

I. (**£10.**)—W. T. GARNE & SON, Aldsworth, Northleach, R.S.O., Glos.

II. (**£5.**)—W. HOULTON, Broadfield Farm, Northleach.

III. (**£2.**)—W. HOULTON.

R.—W. T. GARNE & SON.

H.C.—R. SWANWICK, Royal Agricultural College Farm, Cirencester.

C.—R. SWANWICK.

CLASS 135.—*Pair of Cotswold Ram Lambs, dropped in* 1911. [5 entries.]

I. (**£10.**)—R. SWANWICK, Royal Agricultural College Farm, Cirencester.

II. (**£5.**)—R. SWANWICK.

* For the best quality of Butter produced by a Certificated or Prize Cow in Class 133.

III. (Bronze Medal.)—W. T. GARNE & SON, Aldsworth, Northleach, R.S.O., Glos.

R.—W. T. GARNE & SON.

C.—W. HOULTON, Broadfield Farm, Northleach.

CLASS 136.—*Pen of three Cotswold Shearling Ewes.* [4 entries.]

I. (£10.)—W. HOULTON, Broadfield Farm, Northleach.

II. (£5.)—W. T. GARNE & SON, Aldsworth, Northleach, R.S.O., Glos.

III. (Bronze Medal.)—W. T. GARNE & SON.

R.—R. SWANWICK, Royal Agricultural College Farm, Cirencester.

DEVON LONGWOOLLED.

(The 1st Prize in Class 137 was given by the Devon Longwoolled Sheep Breeders' Society).

CLASS 137.—*Devon Longwoolled Shearling Ram.* [3 entries.]

I. (£10.)—F. WHITE, Torweston, Williton, Somerset.

II. (£5.)—F. WHITE.

III. (Bronze Medal.)—F. WHITE.

CLASS 138.—*Pair of Devon Longwoolled Ram Lambs, dropped in 1911.*—(3 entries.]

I. (£10.)—F. WHITE, Torweston, Williton, Somerset.

II. (£5.)—F. WHITE.

III. (Bronze Medal.)—F. WHITE.

CLASS 139.—*Pen of three Devon Longwoolled Shearling Ewes.* [3 entries.]

I. (£10.)—F. WHITE, Torweston, Williton, Somerset.

II. (£5.)—F. WHITE.

III. (Bronze Medal.)—F. WHITE.

KENT OR ROMNEY MARSH.

(The Prizes in Class 140 were given by the Kent or Romney Marsh Sheep Breeders' Association).

CLASS 140.—*Kent or Romney Marsh Two-Shear Ram.* [9 entries.]

I. (£10.)—C. FILE, Elham, Canterbury.

II. (£5.)—J. E. QUESTED, The Firs, Cheriton, Kent.

III. (**£2.**)—C. File.

R.—A. J. Hickman, Court Lodge, Egerton, Kent.

H.C.—L. H. and G. W. Finn, Westwood Court, Faversham.—F. Neame, Macknade, Faversham.—J. E. Quested.

Class 141.—*Kent or Romney Marsh Shearling Ram.* [21 entries.]

I. (**£10.**)—J. E. Quested, The Firs, Cheriton, Kent.

II. (**£5.**)—C. File, Elham, Canterbury.

III. (**£2.**)—C. File.

R.—C. File.

H.C.—F. Neame, Macknade, Faversham.—J. E. Quested.—J. E. Quested.—W. Rendall, Hempton Lodge, Monks Horton, near Hythe.

Class 142.—*Pen of three Kent or Romney Marsh Shearling Ewes.* [11 entries.]

I. (**£10.**)—C. File, Elham, Canterbury.

II. (**£5.**)—J. E. Quested, The Firs, Cheriton, Kent.

III. (**£2.**)—C. File.

R.—W. Rendall, Hempton Lodge, Monks Horton, near Hythe.

H.C.—W. M. Cazalet, Fairlawne, Tonbridge, Kent.

SOUTHDOWN.

(The Prizes in Class 143 were given by the Southdown Sheep Society).

Class 143.—*Southdown Two-Shear Ram.* [5 entries.]

I. (**£10**) and Special*—C. R. W. Adeane, Babraham Hall, Cambs.

II. (**£5.**)—C. R. W. Adeane.

III. (**£2.**)—F. H. Jennings, Cockfield Hall, Bury St. Edmunds.

R.—Sir J. Wernher, Bart., Luton Hoo, Luton, Beds.

Class 144.—*Southdown Shearling Ram.* [11 entries.]

I. (**£10**) and **R.** for Special*—J. R. West, Alscot Park, Stratford-on-Avon.

II. (**£5.**)—F. H. Jennings, Cockfield Hall, Bury St. Edmunds.

III. (**£2.**)—Sir J. Wernher, Bart., Luton Hoo, Luton, Beds.

R.—C. R. W. Adeane, Babraham Hall, Cambs.

H.C.—W. M. Cazalet, Fairlawne, Tonbridge, Kent.—C. R. W. Adeane.

* Given by the Southdown Sheep Society, under Condition 68, a Silver Medal, or £1 for the best Ram or Ram Lamb in Classes 143, 144 or 145.

CLASS 145.—*Pair of Southdown Ram Lambs, dropped in* 1911. [6 entries.]

I. (**£10.**)—W. M. CAZALET, Fairlawne, Tonbridge, Kent.

II. (**£5.**)—W. M. CAZALET.

III. (**£2.**)—SIR J. WERNHER, BART., Luton Hoo Park, Luton, Beds.

R.—J. R. WEST, Alscot Farm, Stratford-on-Avon.

H.C.—F. H. JENNINGS, Cockfield Hall, Bury St. Edmunds.

CLASS 146.—*Pen of three Southdown Shearling Ewes.* [3 entries.]

I. (**£10.**)—F. H. JENNINGS, Cockfield Hall, Bury, St. Edmunds.

II. (**£5.**)—W. M. CAZALET, Fairlawne, Tonbridge, Kent.

III. (**Bronze Medal**).—SIR J. WERNHER, BART., Luton Hoo, Luton, Beds.

HAMPSHIRE DOWN.

CLASS 147.—*Hampshire Down Shearling Ram.* [7 entries.]

I. (**£10.**)—THE HON. MRS. PLEYDELL-BOUVERIE, Coleshill House, Highworth, Wilts.

II. (**£5.**)—H. C. STEPHENS, Cholderton, Salisbury.

III. (**£2.**)—J. FLOWER, Chilmark, Salisbury.

R.—D. NICOLL, Burntwood, Martyr Worthy, Winchester.

H.C.—THE HON. MRS. PLEYDELL-BOUVERIE.

C.—H. C. STEPHENS.

CLASS 148.—*Pair of Hampshire Down Ram Lambs, dropped in* 1911. [6 entries.]

I. (**£10.**)—H. C. STEPHENS, Cholderton, Salisbury.

II. (**£5.**)—J. FLOWER, Chilmark, Salisbury.

III. (**£2.**)—D. NICOLL, Burntwood, Martyr Worthy, Winchester.

R.—THE HON. MRS. PLEYDELL-BOUVERIE, Coleshill House, Highworth, Wilts.

H.C.—E. A. EDNEY, Five Heads Farm, Horndean, Hants.

C.—J. H. ISMAY, Iwerne Minster House, Blandford.

CLASS 149.—*Pen of three Hampshire Down Shearling Ewes.* [2 entries.]

I. (**£10.**)—J. FLOWER, Chilmark, Salisbury.

II. (**Silver Medal.**)—D. NICOLL, Burntwood, Martyr Worthy, Winchester.

(The Prizes in Class 150 were given by the Hampshire Down Sheep Breeders' Association).

CLASS 150.—*Pen of three Hampshire Down Ewe Lambs, dropped in* 1911. [6 entries.]

I. (£7.)—J. FLOWER, Chilmark, Salisbury.

II. (£3.)—H. C. STEPHENS, Cholderton, Salisbury.

R.—THE HON. MRS. PLEYDELL-BOUVERIE, Coleshill House, Highworth, Wilts.

H.C.—J. H. ISMAY, Iwerne Minster House, Blandford.

C—E. A. EDNEY, Five Heads Farm, Horndean, Hants.

SHROPSHIRE.

CLASS 151.—*Shropshire Shearling Ram.* [6 entries.]

I. (£10.)—F. BIBBY, Hardwicke Grange, Shrewsbury.

II. (£5.)—SIR R. COOPER, BART., Ashlyns Hall, Berkhamsted.

III. (£2.)—F. BIBBY,

R. & H.C.—SIR R. COOPER, BART.

C.—J. J. BREWIN, Whitehouse, Barnston, Cheshire.

CLASS 152.—*Pen of three Shropshire Shearling Ewes.* [5 entries.]

I. (£10.)—SIR R. COOPER, BART., Ashlyns Hall; Berkhamsted.

II. (£5.)—SIR R. COOPER, BART.

III. (Bronze Medal.)—F. BIBBY, Hardwicke Grange, Shrewsbury.

R. & H.C.—F. BIBBY.

C.—J. J. BREWIN, Whitehouse, Barnston, Cheshire.

OXFORD DOWN.

CLASS 153.—*Oxford Down Shearling Ram.* [11 entries.]

I. (£10.)—J. HORLICK, Cowley Manor. near Cheltenham.

II. (£5.)—J. T. HOBBS, Maisey Hampton, Fairford.

III. (£2.)—J. T. HOBBS.

R. & H.C.—G. ADAMS & SONS, Royal Prize Farm, Faringdon, Berks.

H.C.—A. BRASSEY, Heythrop Park, Chipping Norton.

C.—G. ADAMS & SONS.—A. BRASSEY.—J. T. HOBBS.—J. HORLICK.

CLASS 154.—*Pair of Oxford Down Ram Lambs, dropped in* 1911. [5 entries.]

I. (£10.)—G. ADAMS & SONS, Royal Prize Farm, Faringdon, Berks.

II. (£5.)—G. ADAMS & SONS.

III. (Bronze Medal.)—J. HORLICK, Cowley Manor, near Cheltenham.

R. & C.—A. BRASSEY, Heythrop Park, Chipping Norton.

CLASS 155.—*Pen of three Oxford Down Shearling Ewes.* [6 entries.]

I. (£10.)—A. BRASSEY, Heythrop Park, Chipping Norton.

II. (£5.)—J. HORLICK, Cowley Manor, near Cheltenham.

III. (£2.)—J. T. HOBBS, Maisey Hampton, Fairford.

R. & H.C.—J. T. HOBBS.

(The Prizes in Class 156 were given by the Oxford Down Sheep Breeders' Association and will be withheld until the animals awarded the prizes are registered in the Flock Book).

CLASS 156.—*Pair of Oxford Down Ewe Lambs, dropped in* 1911. [4 entries.]

I. (£6.)—G. ADAMS & SONS, Royal Prize Farm, Faringdon, Berks.

II. (£3.)—G. ADAMS & SONS.

III. (£1.)—J. HORLICK, Cowley Manor, near Cheltenham.

DORSET DOWN.

(The 1st Prizes in Classes 157 and 158 were given by the Dorset Down Sheep Breeders' Association).

CLASS 157.—*Dorset Down Shearling Ram.* [5 entries.]

I. (£10.)—EDEN & WATSON, Purse Caundle, Sherborne, Dorset.

II. (£5.)—EDEN & WATSON.

III. (Bronze Medal.)—G. C. WOOD-HOMER, Bardolf Manor, Dorchester.

R.—R. TORY, Charisworth, Whitechurch, Blandford.

CLASS 158.—*Pair of Dorset Down Ram Lambs, dropped in* 1911. [5 entries.]

I. (£10.)—EDEN & WATSON, Purse Caundle, Sherborne, Dorset.

II. (£5.)—R. TORY, Charisworth, Whitechurch, Blandford.

III. (Bronze Medal.)—EDEN & WATSON.

R.—R. TORY.

CLASS 159.—*Pen of three Dorset Down Shearling Ewes.* [6 entries.]

I. (£10.)—R. TORY, Charisworth, Whitechurch, Blandford.

II. (£5.)—G. C. WOOD-HOMER, Bardolf Manor, Dorchester.

III. (£2.)—EDEN & WATSON, Purse Caundle, Sherborne, Dorset.

R.—EDEN & WATSON.

H.C.—H. & B. DUKE, Dorchester.—R. TORY.

EXMOOR HORN.

(The Prizes in Class 160 were given by the Exmoor Horn Sheep Breeders' Society.)

CLASS 160.—*Exmoor Horn Shearling Ram* [4 entries.]

I. (£10.)—P. SMYTH, Broford, Dulverton, Somerset.

II. (£5.)—R. R. ROTHWELL, Morebath Manor, Bampton, Devon.

III. (£2.)—D. J. TAPP, Highercombe, Dulverton.

R.—J. ROBINS, Lidcot Hall, High Bray, South Molton.

CLASS 161.—*Pair of Exmoor Horn Ram Lambs, dropped in* 1911. [3 entries.]

I. (£10.)—P. SMYTH, Broford, Dulverton, Somerset.

II. (£5.)—R. R. ROTHWELL, Morebath Manor, Bampton, Devon.

III. (Bronze Medal).—J. ROBINS, Lidcot Hall, High Bray, South Molton.

CLASS 162.—*Pen of three Exmoor Horn Shearling Ewes.* [3 entries.]

I. (£10.)—J. ROBINS, Lidcot Hall, High Bray, South Molton.

II. (£5.)—R. R. ROTHWELL, Morebath Manor, Bampton, Devon.

III. (Bronze Medal.)—D. J. TAPP, Highercombe, Dulverton.

WELSH MOUNTAIN.

(The Prizes in Class 163 were offered by the Cardiff Local Committee; in Class 164 by the Glamorgan Auxiliary Fund Committee; and in Class 165 by the Bedwellty Agricultural Society.)

CLASS 163.—*Mountain Ram, above* 1 *year old, to be shorn on or after March* 1, 1911, *and previous to date of Show. First prize,* £5—*second,* £3.

[NO ENTRY.]

CLASS 164.—*Pen of three Welsh Mountain Ewes that have bred Lambs in* 1911, *the property of a Tenant Farmer in South Wales or Monmouthshire. To be shorn on or after March* 1, 1911. *First prize,* £5—*second,* £3.

[NO ENTRY.]

CLASS 165.—*Pen of three Welsh Mountain Wethers, bred by Exhibitor, resident in South Wales or Monmouthshire.* [1 entry.]

I. (£4.)—E. NICHOLAS & SON, The Aeral Farm, Abertillery.

RYELAND.

(The Prizes in Class 166 were given by the Ryeland Flock Book Society.)

CLASS 166.—*Ryeland Ram of any age.* [7 entries.]

I. (£5.)—F. E. GOUGH, The Moor, Bodenham, Herefordshire, bred by W. H. Barnaby, Saltmarshe Castle, Bromyard.

II. (£3.)—H. A. CHRISTY, Llangoed, Llyswen, Brecon, bred by W. T. Barnaby Saltmarshe, Bromyard.

III. (£2.)—D. J. THOMAS, Talachddu, Brecon, bred by E. W. T. L. Brewer-Williams, Maesruddud, Blackwood.

R.—MRS. HERBERT OF CLYTHA, Clytha Park, Abergavenny, bred by H. A. Christy, Llangoed, Llyswen, Brecon.

(The Prizes in Class 167 were given by the Glamorgan Agricultural Auxiliary Fund Committe.)

CLASS 167.—*Pen of three Ryeland Shearling Ewes.* [7 entries.]

I. (£5.)—F. E. GOUGH, The Moor, Bodenham, Herefordshire.

II. (£3.)—H. A. CHRISTY, Llangoed, Llyswen, Brecon.

III. (£2.)—H. A. CHRISTY.

R.—D. J. THOMAS, Talachddu, Brecon.

ANY BREED.

(The Prizes in Classes 168, 169 and 170 were offered by the Cardiff Local Committee.)

CLASS 168.—*Pair of Ram Lambs, dropped in* 1911, *the property of a Tenant Farmer in South Wales or Monmouthshire. First prize,* £5—*second,* £3.

[NO ENTRY.]

CLASS 169.—*Pen of three Ewes that have bred Lambs in* 1911 (*shown with or without offspring*), *the property of a Tenant Farmer in South Wales or Monmouthshire. First prize,* £5—*second,* £3.

[NO ENTRY.]

CLASS 170.—*Pen of three Ewe Lambs, the property of a Tenant Farmer in South Wales or Monmouthshire. First prize,* £5—*second* £3.

[NO ENTRY.]

PIGS.

BERKSHIRE.

CLASS 171.—*Berkshire Boar, farrowed in* 1908, 1909 *or* 1910. [7 entries.]

I. (£7) and **R.** for Special*—W. BUCKLEY, Moundsmere Manor, Basingstoke, **Oxford Viscount**, born 13th January, 1910, bred by Hon. A. Holland Hibbert, Watford; s Munden Champion (12735), d Lincoln Beauty (13217), s d Munden Viscount (10885).

II. (£3.)—L. CURRIE, Minley Manor, Farnboro', Hants., **Minley Tom** (15091), born 2nd September, 1909; s Czar (13918), d Minley Prudence (13906), s d Highmoor Viscount (12711).

III. (£2.)—D. E. HIGHAM, Coombelands, Addlestone, Surrey, **Thoresby Champion Belman** (14432), born 27th June, 1908, bred by Earl Manvers, Thoresby, Notts; s Thoresby Champion (12611), d Thoresby Bluebell 1st (12534), s d Highmoor Mikado (10433 and 10034).

R.—S. SANDAY, Puddington Hall, Chester. **Whitley Duke 2nd**, born 30th April, 1908, bred by the Reading Corporation, Manor Farm, Reading; s Dunley Lad (10800), d Whitley Princess (11723), s d D'field Bowler (9050).

H.C.—A. HISCOCK, Manor Farm, Motcombe, Dorset, **Wyndthorpe Canton** (14224), born 26th June, 1908, bred by — Chetwynd, Wyndthorpe, near Doncaster; s Highmoor Santoi (11805), d Wyndthorpe Carnation (14442), s d Don Confidence (10987).

C.—D. E. HIGHAM, **Compton Franklin** (15378), born 4th January, 1910, bred by R. B. Vincent, Compton Valence, Dorchester; s Sir Frank (14656), d Tom Fanciful 1st (14216), s d Tom Peel (13212).

CLASS 172.—*Pair of Berkshire Boars, farrowed in* 1911. [4 entries.]

I. (£5.)—J. A. FRICKER, Suddon Grange, Wincanton, born 5th January; s Robert (14635), d Suddôn Belinda (12994), s d Hightide (9373).

II. (£2.)—L. CURRIE, Minley Manor, Farnboro', Hants, born 7th January; s Highmoor Viscount (12721), d Motcombe Kitty (14628), s d Dorset Edward (14007).

III. (**Bronze Medal.**)—W. BUCKLEY, Moundsmere Manor, Basingstoke, born 21st January; s Moundsmere Tom (13545), d Danesfield Primrose (13853), s d Danesfield Miller (12002).

CLASS 173.—*Berkshire Breeding Sow, farrowed before* 1911. [9 entries.]

I. (£7) and Special*—S. SANDAY, Puddington Hall, near Chester, **Puddington Princess Royal** (15409), born 2nd February, 1910; s Whitley Duke 2nd, d Polegate Dorothy (13948), s d Harold H. (10238).

*** Given by the British Berkshire Society for the best Boar or Sow in the Berkshire Classes, entered in, or eligible for, the Herd Book, whose Sire and Dam, together with the name of its breeder, are entered in the Catalogue—£5.**

II. (£3.)—W. BUCKLEY, Moundsmere Manor, Basingstoke, **Hairbell 2nd**, born 3rd January, 1910, bred by — Vincent, Dorchester; s Sir Frank (14656), d Compton Bluebell (13988), s d Highmoor Tory (11037).

III. (£2.)—J. A. FRICKER, Suddon Grange, Wincanton, **Suddon Keepsake**, born 3rd January, 1910; s Fightable F.B. (11246), d Suddon Belinda (12994), s d Hightide (9373).

R.—J. H. ISMAY, Iwerne Minster House, Blandford, **Iwerne 5th** (15501), born 3rd March, 1910; s Ambassador (14767), d Manor Sceptre (14079), s d Okeford Edward (10777).

H.C. J. JEFFERSON, Willaston, Nantwich, **Crewe Rosebud** (15557), born 2nd January, 1909; s His Lordship (9337), d Barford Rosa (10402), s d Baron Kitchener (8403).

C.—L. CURRIE, Minley Manor, Farnborough, Hants, **Minley Prudence** (13906), born 17th May, 1908; s Highmoor Viscount (13906), d Pearl of Minley (13460), s d Simpleton (11428).—D. E. HIGHAM, Coombelands, Addlestone, Surrey, **Compton Bluebell** (13988), born 30th October, 1907; bred by R. B. Vincent, late of Compton Valence, Dorchester; s Highmoor Tory (11037), d Compton Briar (12268), s d Supreme's Boy (9743).—J. H. ISMAY, **Iwerne 1st** (15500), born 1st March, 1910; s Ambassador (14767), d Lady Julius (14078), s d Highfield F.B. (9373).

CLASS 174.—*Pair of Berkshire Breeding Sows, farrowed in* 1911. [7 entries.]

I. (£5.)—A. HISCOCK, Manor Farm, Motcombe, born 2nd January; s Highmoor Santoi (11805), d Sweet Gladwyn (13848), s d Hightide F.B. (9573).

II. (£2.)—W. BUCKLEY, Moundsmere Manor, Basingstoke, born 21st January; s Moundsmere Tom (13545), d Danesfield Primrose (13853), s d Danesfield Miller (12002).

III. (£1.) J. A. FRICKER, Suddon Grange, Wincanton, born 6th January; s Robert (14635), d Gillingham S.G. (12043), s d Freshman F.B. (10081).

R.—S. SANDAY, Puddington Hall, Chester, born 22nd January: s Whitley Duke 2nd (14541), d Polegate Dorothy (13948), s d Harold H. (10238).

H.C.—J. JEFFERSON, Willaston, Nantwich, born 3rd January; s Crewe Sensation (15140), d Crewe Rosebud (15557), s d His Lordship (9337).

C.—L. CURRIE, Minley Manor, Farnboro, Hants, born 2nd January; s Highmoor Viscount (12721), d Minley Polly 3rd (14620), s d Czar (13918).

LARGE BLACK.

CLASS 175.—*Large Black Boar, farrowed in* 1908, 1909, *or* 1910. [4 entries.]

I. (£7.)—T. F. HOOLEY, Dry Drayton, Cambs., **Drayton Disappointment** (3337), born 26th July, 1909; s Drayton Demon 4th (2353), d Drayton Dainty 8th (7148), s d Henley Achilles (1999).

II. (£3.)—W. J. WARREN, Little Kibbear Farm, Pitminster, near Trull, Taunton, Somerset, **Kibbear General** (3199), born 2nd September, 1909; s Jumbo (2943), d Ash Prior Lady (7066), s d Cothelstone Victor (1435).

III. (**Bronze Medal.**)—J. WARNE, Treveglos, St. Mabyn, S.O., Cornwall, **Sudbourne Jock** (3005), born 9th January, 1909, bred by K. M. Clark, Sudbourne Hall, Orford, Suffolk; s Sudbourne Masterpiece (2305), d Sudbourne Joy 3 A (5096), s d Sudbourne Shot (985).

R.—G. W. MARSHALL, The Cottage, Roborough, South Devon, born 15th June, 1910; s The General (3077), d Colquite Carnation 3rd, s d Hendra Pride.

CLASS 176.—*Pair of Large Black Boars, farrowed in* 1911. [5 entries.]

I. (**£5.**)—T. WARNE, Trevisquite Manor, St. Mabyn, S.O., Cornwall, born 2nd January; s Trekelland Masterpiece (2267), d Trevisquite Content 4th (6934).

II. (**£2.**)—T. F. HOOLEY, Dry Drayton, Cambs., born 3rd January; s Henley Victor (2947), d Marchioness 7th (7580), s d The Prior (1427).

III. (**Bronze Medal.**)—J. WARNE, Treveglos, St. Mabyn, S.O., born 24th January; s Sudbourne Jock (3005), d Treveglos Lass 2nd (6220), s d Trevisquite Confidence (1203).

R.—T. WARNE, born 2nd January; s Trekelland Masterpiece (2267), d Trevisquite Content 4th (6934).

CLASS 177.—*Large Black Breeding Sow, farrowed before* 1911. [3 entries.]

I. (**£7.**)—T. F. HOOLEY, Dry Drayton, Cambs., **Drayton Lucky Girl** (8490), born 31st January, 1909; s Drayton Demon 4th (2353), d Stroud Missie 3rd (6498), s d Borstal Masterpiece (841).

II. (**£3.**)—J. WARNE, Treveglos, St. Mabyn, S.O., **Treveglos Godiva 2nd** (9576), born 10th January, 1910; s Leviathan (2937), d Treveglos Godiva (7968), s d Treveglos Pride (2221).

III. (**Bronze Medal.**)—W. J. WARREN, Little Kibbear Farm, Pitminster, near Trull, Taunton, Somerset, **Kibbear Black Lady 1st** (9650), born 11th March, 1910; s Menna Cyclone (2533), d Ash Prior Lady (7066), s d Cothelstone Victor (1435).

(The Prizes in Class 178 were given by the Large Black Pig Society.)

CLASS 178.—*Large Black Breeding Sow, not exceeding* 12 *months old on May* 1*st*, 1911. [5 entries.]

I. (**£7.**)—T. F. HOOLEY, Dry Drayton, Cambs., **Drayton Daisy** (9702), born 3rd May, 1910; s Henley Victor (2947), d Drayton Czarina 3rd (8484), s d Drayton Demon 4th (2353).

II. (**£3.**)—G. W. MARSHALL, The Cottage, Roborough, South Devon, born 15th June, 1910; s The General (3077), d Colquite Carnation 3rd, s d Hendra Pride.

III. (**£2.**)—T. WARNE, Trevisquite Manor, St. Mabyn, Cornwall, born 10th August, bred by J. Warne, Treveglos, St. Mabyn, S.O., Cornwall; s Tinten Duke (3019), d Treveglos Lass 2nd (6220).

R.—J. WARNE, Treveglos, St. Mabyn, S.O., Cornwall, **Treveglos Angelina 2nd,** born 13th August; s Tinten Duke (3019), d Treveglos Angelina (8676), s d Treveglos Pride (2221).

V.H.C.—T. WARNE, born 10th August, bred by J. Warne, Treveglos, St. Mabyn, Cornwall; s Tinten Duke (3019), d Treveglos 2nd (6220).

CLASS 179.—*Pair of Large Black Breeding Sows, farrowed in* 1911. [5 entries.]

I. (£5.)—W. AND H. WHITLEY, Primley Farm, Paignton, born 8th January; s Tiptree 1st (2933), d Brent Sapphire (6694), s d Cornwood King (1467).

II. (£2.)—J. H. GLOVER, Cornwood, South Devon, born 1st January, bred by T. F. Hooley, Dry Drayton, Cambs.; s Henley Victor (2947), d Drayton Chinella (8486), s d Drayton Demon 4th (2353).

III. (Bronze Medal).—T. F. HOOLEY, Dry Drayton, Cambs., born 3rd January; s Henley Victor (2947), d Marchioness 7th (7580), s d The Prior (1427).

R.—T. WARNE, Trevisquite Manor, St. Mabyn, Cornwall, born 2nd January; s Trekelland Masterpiece (2267), d Trevisquite Content 4th (6934).

V.H.C.—J. WARNE, Treveglos, St. Mabyn, S.O., Cornwall, born 5th January, bred by T. Warne, Trevisquite, St. Mabyn; s Trekelland Masterpiece (2267), d Trevisquite Lady (3024), s d Trevisquite Leader (403).

LARGE WHITE.

CLASS 180.—*Large White Boar, farrowed in* 1908, 1909 *or* 1910. [4 entries.]

I. (£7) and Special*—EARL OF ELLESMERE, Worsley Hall, near Manchester, **Worsley Turk 6th** (12975), born 8th January, 1909; s Worsley Turk 4th (11217), d Bottesford Marchington Queen (18128), s d Bottesford Arthur (8487).

II. (£3.)—EARL OF ELLESMERE, **Dreadnought 2nd** (12477), born 13th February, 1908, bred by J. Archer, Stragglethorpe, Nottingham; s Rover of Stragglethorpe (10075), d Stragglethorpe Lady Snow 2nd (19574), s d Colston King Frost 6th (9057).

III. (Bronze Medal.)—R. E. W. STEPHENSON, Tue Brook, Liverpool, **West Derby Duke 10th** (Vol. xxviii.), born 27th August, 1909; s Duke of West Derby (12485), d Sowerby Queen 2nd (21636), s d Sowerby King 3rd (10121).

R.—LADY LLOYD, Bronwydd, Heullan, Cardiganshire, **Hopeful Choice,** born 4th January, 1909, bred by R. M. Knowles, Colston Bassett; s Chilton's Choice (9655), d Lady Snow 24A, s d Colston Jonas (9053).

* Given by the National Pig Breeders' Association, a Gold Medal, value £3 3s. or £3 3s. in money), for the best animal in the Large White Classes, entered in or eligible for the Herd Book, and the names and numbers of whose sire and dam appear in the Catalogue.

CLASS 181.—*Pair of Large White Boars, farrowed in* 1911. [3 entries.]

I. (**£5.**)—R. E. W. STEPHENSON, Tue Brook, Liverpool, born 1st January, s Bourne Giant Goliath (10631), d Wyboston Bella (26718), s d Bottesford Eclipse (10615).

II. (**£2.**)—EARL OF ELLESMERE, Worsley Hall, near Manchester, born 4th January; s Worsley Turk 4th (11217), d Worsley Empress 16th (23804), s d Roger (7203).

III. (**Bronze Medal.**)—EARL OF ELLESMERE, born 4th January; s Dreadnought 2nd (12477), d Lady Rose 4th (21080), s d Peterborough Marquis (10045).

CLASS 182.—*Large White Breeding Sow, farrowed before* 1911. [4 entries.]

I. (**£7**) and **R.** for Special*—EARL OF ELLESMERE, Worsley Hall, near Manchester, **Worsley Marchington Queen 1st** (26648), born 8th January, 1909; s Worsley Turk 4th (11217), d Bottesford Marchington Queen (18128), s d Bottesford Arthur (8487).

II. (**£3.**)—R. E. W. STEPHENSON, Tue Brook, Liverpool, **Tallington Companion** (29914), born 10th January, 1909, bred by W. E. Measures, Tallington, Stamford; s Ruddington Right Stamp (8717), d Tallington Carnation 1st (21716), s d Worsley Monarch 20th (9371).

CLASS 183.—*Pair of Large White Breeding Sows, farrowed in* 1911. [2 entries.]

I. (**£5.**)—EARL OF ELLESMERE, Worsley Hall, near Manchester, born 6th January; s Emperor of Worsley (10791), d Worsley Hope 4th (21854), s d Worsley Eclipse 9th (9365).

MIDDLE WHITE.

CLASS 184.—*Middle White Boar, farrowed in* 1908, 1909 *or* 1910. [5 entries.]

I. (**£7**) and Special†—C. SPENCER, Holywell Manor, St. Ives, Hunts, **Holywell Jonathan,** born 22nd July, 1908; s Offley John (7395), d Holwell Colony Grace (17718), s d Holywell Count Curly (5713).

* Given by the National Pig Breeders' Association, a Gold Medal, value £3 3s. (or £3 3s. in money), for the best animal in the Large White Classes, entered in or eligible for the Herd Book, and the names and numbers of whose sire and dam appear in the Catalogue.

† Given by the National Pig Breeders' Association, a Gold Medal, value £3 3s. (or £3 3s. in money), for the best animal in the Middle White Classes, entered in or eligible for the Herd Book, and the names and numbers of whose sire and dam appear in the Catalogue.

II. (**£3.**)—SIR G. GREENALL, Bart., Walton Hall, Warrington, **Walton Clumber 5th** (12107), born 16th January, 1908; s Walton Clumber 4th (9427), d Walton Rose 67th (22130), s d Offley John (7395).

III. (**Bronze Medal.**)—SIR G. GREENALL, Bart., **Walton Clumber 6th** (13113), born 17th January, 1909; s Walton Clumber 4th (9427), d Walton Rose 60th (20000), s d Walton Dainty 3rd (8201).

CLASS 185.—*Pair of Middle White Boars, farrowed in* 1911.
[5 entries.]

I. (**£5.**)—L. C. PAGET, Middlethorpe Hall, York, born 2nd January; s Wharfedale Reveller (11329), d Wharfedale Marguerite (27194), s d Wharfedale Flash (13127).

II. (**£2.**)—L. C. PAGET, born 2nd January; s Wharfedale Reveller (11329), d Wharfedale Marguerite (27194), s d Wharfedale Flash (13127).

III. (**Bronze Medal.**)—W. B. HILL, Underhill Farm, Cannock Road, Wolverhampton, born 7th January; s Prestwood John (Vol. xxvii.), d Prestwood Rose 3rd, s d Wharfedale Bard (12111).

CLASS 186.—*Middle White Breeding Sow, farrowed before* 1911.
[5 entries.]

I. (**£7**) and **R.** for Special*—C. SPENCER, Holywell Manor, St. Ives, Hunts, **Holywell Rosella 1st** (24092), born 6th August, 1907; s Holywell Rosario (8857), d Holywell Vicaress (19906), s d Holywell Viscount (8179).

II. (**£3.**)—SIR G. GREENALL, Bart., Walton Hall, Warrington, **Walton Rose 69th** (24194), born 5th October, 1907; s Southampton Prince (10317), d Walton Rose 49th (17780), s d Walton Rufus (8215).

III. (**Bronze Medal.**)—SIR G. GREENALL, Bart., **Walton Rose 80th** (27182), born 17th January, 1909; s Walton Clumber 4th (9427), d Walton Rose 60th (20000), s d Walton Dainty 3rd (8201).

R.—G. W. STARK, Forge Farm, Caerleon, **Primrose**, born 20th January, 1909, bred by the Earl of Sefton, Croxteth Hall; s Tarbock Clumber (12101), d Tarbock Pattie 12th (22082), s d Walton Turret 12th (9453).

CLASS 187.—*Pair of Middle White Breeding Sows, farrowed in* 1911.
[4 entries.]

I. (**£5.**)—L. C. PAGET, Middlethorpe Hall, York, born 2nd January; s Wharfedale Reveller (11329), d Wharfedale Marguerite (27194), s d Wharfedale Flash (13127).

II. (**£2.**)—A. HISCOCK, Manor Farm, Motcombe, Dorset, born 5th January; s Stuart's Fame (11309), d Ruby's 2nd, s d Wonder's Best Brother (10345).

III. (**Bronze Medal.**)—W. B. HILL, Underhill Farm, Cannock Road, Wolverhampton, born 1st January; s Prestwood Bugler (Vol. xxvii., H.B.), d Prestwood Gretchen (Vol. xxvii.), s d Holywell Vicar 3rd (12073).

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* Given by the National Pig Breeders' Association, a Gold Medal, value £3 3s. (or £3 3s. in money), for the best animal in the Middle White Classes, entered in or eligible for the Herd Book, and the names and numbers of whose sire and dam appear in the Catalogue.

TAMWORTH.

CLASS 188.—*Tamworth Boar, farrowed in* 1908, 1909 *or* 1910. [5 entries.]

I. (£7) and Special*—R. IBBOTSON, Knowle, Warwickshire, **Knowle Burleigh,** born 2nd August, 1909; s Knowle Lord Cromer (11385), d Knowle Sylvia 2nd (24340), s d Knowle King Solomon (10407).

II. (£3.)—R. IBBOTSON, **Knowle Syvanus,** born 3rd January, 1910; s Knowle Lord Minto (12191), d Knowle Sylvia 2nd (24340), s d Knowle King Solomon.

III. (**Bronze Medal.**)—MRS. E. MORANT, Brokenhurst Park, Hants, **Dilton Duke,** born 21st January, 1910; s Forester of Dilton (13179), d Megallie of Dilton (22270), s d Middleton Matoppo (9537).

R.—E. DE HAMEL, Middleton Hall, Tamworth, **Mason of Middleton** (13217), born 29th December, 1908, bred by Sir P. Walker, Osmaston Manor, Ashbourne; s Knowle Baron (12189), d Rose of Osmaston (24392), s d Bishop of Knowle (11337).

CLASS 189.—*Pair of Tamworth Boars, farrowed in* 1911. [7 entries.]

I (£5)—SIR O. MOSLEY, Bart., Rolleston Hall, Burton-on-Trent, born 1st January; s Mike (Vol. xxvii.), d Rolleston Freezia 3rd (27424), s d Jimmy (11359).

II (£2)—E. DE HAMEL, Middleton Hall, Tamworth, born 2nd January; s Mason of Middleton (13217), d Middleton M'bega (Vol. xxvii.), s d Gay Lad of Middleton (12181).

III (£1)—MRS. E. MORANT, Brokenhurst Park, Hants, born 1st January; s Forester of Dilton (13179), d Dilton Megallie, s d Dilton Puritan (11355).

R—R. IBBOTSON, Knowle, Warwickshire, born 5th January; s Knowle Sylvanus, d Knowle Rosalind, s d Knowle Baron.

CLASS 190.—*Tamworth Breeding Sow, farrowed before* 1911. [9 entries.]

I (£7) and **R** for Special*—E. DE HAMEL, Middleton Hall, Tamworth, **Middleton Merker** (Vol. xxvii.), born 4th January, 1909; s Gay Lord of Middleton (12181), d Middleton Microcosma (24364), s d Middleton Majestic (8971).

II (£3)—R. IBBOTSON, Knowle, Warwickshire, **Knowle Constance,** born 16th January, 1910; s Knowle Lord Minto (12191), d Constance (22166), s d Scarlet Gem.

* Given by the National Pig Breeder's Association, a Gold Medal, value £3 3s. (or £3 3s. in money), for the best animal in the Tamworth Classes, entered in or eligible for the Herd Book, and the names and numbers of whose sire and dam appear in the Catalogue.

III (£2)—R. IBBOTSON, **Knowle Princess Dora 2nd** (27336), born 4th February, 1909; s Knowle Lord Cromer (11385), d Knowle Ruby (22258), s d Knowle King David.

R—O. C. H. RILEY, The Brainge, Putley, Ledbury, **Charity** (24258), born 17th April, 1908; s Monmouth 2nd (11421), d Charlotte (22164), s d Charlie (11339).

H C—O. C. H. RILEY, **Countess** (24262), born 17th April, 1908; s Monmouth 2nd (11421), d Charlotte (22164), s d Charlie (11339).

CLASS 191.—*Pair of Tamworth Breeding Sows, farrowed in* 1911. [6 entries.]

I (£5)—MRS. E. MORANT, Brokenhurst Park, Hants, born 1st January; s Forester of Dilton (13179), d Dilton Megallic, s d Dilton Puritan (11355).

II (£2)—O. C. H. RILEY, The Braigne, Putley, Ledbury, Herefordshire, born 7th January; s Crœsus (12137), d Ambrosia of Osmaston (27218), s d Rufus of Osmaston (11435).

III (£1)—R. IBBOTSON, Knowle, Warwickshire, born 3rd January: s Knowle Lord Minto, d Knowle Princess Dora 2nd, s d Knowle Lord Cromer.

R—SIR O. MOSLEY, Bart., Rolleston Hall, Burton-on-Trent, born 1st January; s Mike (Vol. xxvii.), d Rolleston Vetch 2nd (Vol. xxvii.), s d Sweet William (10511).

ANY BREED.

(The Prizes in Classes 192 and 193 were given by Messrs. Chas. and Thos. Harris & Co., Ltd., Calne, Wilts.)

CLASS 192.—*Boar most suitable for producing the best class of pigs for Bacon—Silver Cup, value* £5 5*s*. [5 entries.]

I (Silver Cup)—A. HISCOCK, Manor Farm, Motcombe.

R—R. IBBOTSON, Knowle, Warwickshire, **Knowle Syvanus**, born 3rd January, 1910; s Knowle Lord Minto (12191), d Knowle Sylvia 2nd (24340), s d Knowle King Solomon.

CLASS 193.—*Hilt or Sow most suitable for producing the best class of pigs for Bacon—Silver Cup, value* £5 5*s*. [5 entries.]

I (Silver Cup)—R. IBBOTSON, Knowle, Warwickshire, **Knowle Constance**, born 16th January, 1910; s Knowle Lord Minto (12191), d Constance (22166), s d Scarlet Gem.

R—R. E. W. STEPHENSON, Tue Brook, Liverpool, **Tallington Companion** (29914), born 10th January, 1909, bred by W. E. Measures, Tallington, Stamford; s Ruddington Right Stamp (8717), d Tallington Carnation 1st (21716). s d Worsley Monarch 20th (9371).

PRODUCE.

CIDER.

(Open to Growers or Makers).

First Prize in each Class, a Gold Medal and a Certificate.
Second Prize in each Class, a Silver Medal and a Certificate.
Third Prize in each Class, a Bronze Medal and a Certificate.

CLASS 194.—*Cask of not less than* 18 *and not more than* 30 *gallons of Cider, of the* 1910 *Vintage.* [8 entries.]

I—D. J. CROFTS & SON.
II—J. DAVIES.
III—T. STONE.

CLASS 195.—12 *Bottles of Cider, of the* 1910 *vintage.* [12 entries.]

I—C. OSBORN & SON.
II—D. J. CROFTS & SON.
III—R. H. RIDLER & SON.
R.—R. H. RIDLER & SON.
H.C.—T. STONE.

CLASS 196.—*Cask of not less than* 18 *and not more than* 30 *gallons of Cider, of the* 1910 *vintage.* [10 entries.]

I.—D. J. CROFTS & SON.
II.—D. J. CROFTS & SON.
III.—H. J. DAVIS.
R.—W. T. S. TILLEY.
V.H.C.—W. T. S. TILLEY.
H.C.—CO. ARMAGH CIDER CO.
C.—H. J. DAVIS.

CLASS 197.—12 *Bottles of Cider, of the* 1910 *vintage.* [20 entries.]

I.—H. J. DAVIS.
II.—H. J. DAVIS.
III.—W. T. S. TILLEY.
R.—W. T. S. TILLEY.
V.H.C.—R. H. RIDLER & SON.
H.C.—T. L. STEAD.—T. STONE.
C.—D. J. CROFTS & SON.—H. J. DAVIS.—QUANTOCK VALE CIDER CO.—W. T. S. TILLEY.

CLASS 198.—12 *Bottles of Cider, of any year previous to* 1910 *vintage.* [9 entries.]

I.—R. JOHNSON.

II.—T. STONE.

III.—H. J. DAVIS.

R.—D. J. CROFTS & SON.

V.H.C.—C. OSBORN & SON.

H.C.—W. T. S. TILLEY.

C.—T. STONE.

(The Prizes in Classes 225, 226 and 227 were given by the Monmouthshire Agricultural Education Committee, and were open only to Students of that Department).

CLASS 225.—9 *Gallon Cask of Cider, made in Monmouthshire in* 1910. [3 entries.]

I. (£1 10s.)—T. L. STEAD.

II. (£1.)—J. STEAD.

III. (10s.)—R. JOHNSON.

CLASS 226.—12 *Bottles of Cider, made in Monmouthshire in* 1910. [4 entries.]

I. (£1 10s.)—T. L. STEAD.

II. (£1.)—J. STEAD.

III. (10s.)—R. JOHNSON.

CLASS 227.—12 *Bottles of Cider, made in Monmouthshire previous to* 1910. [1 entry.]

I. (£1 10s.)—R. JOHNSON.

CHEESE.

CLASS 199.—*Three Cheddar Cheeses (not less than* 56*lbs. each), made in* 1910. [10 entries.]

I. (£15.)—CARY & PORTCH.

II. (£10.)—E. BRAKE.

III. (£5.)—J. SAGE.

R.—C. C. HARDING.

V.H.C.—T. C. CANDY.

H.C.—G. D. TEMPLEMAN.

C.—J. CANDY.—G. MILLARD.

CLASS 200.—*Three Cheddar Cheeses* (*not over* 56*lbs. each*), *made in* 1910. [6 entries.]

I. (£8.)—CARY & PORTCH.

II. (£5.)—E. BRAKE.

III. (£3.)—G. D. TEMPLEMAN.

R.—C. C. HARDING.

V.H.C.—T. C. CANDY.

H.C.—J. SAGE.

CLASS 201.—*Three Single Gloucester or Wilts Cheeses, made in* 1911. [8 entries.]

I. (£6.)—CARY & PORTCH.

II. (£4.)—P. H. FRANCIS.

III. (£2.)—G. D. TEMPLEMAN.

R.—J. SAGE.

V.H.C.—A. WARREN.—W. H. WEEKS.

C.—MISS E. M. LEWIS.

CLASS 202.—*Eight Loaf or other Truckle Cheeses, made in* 1910. [7 entries.]

I (£5.)—CARY & PORTCH.

II. (£3.)—E. WHITE.

III. (£2.)—J. CANDY.

R.—J. E. ASHBY.

V.H.C.—T. C. CANDY.

H.C.—F. G. PUDDY.

C.—MRS. MILLARD.

CLASS 203.—*Three Caerphilly Cheeses, made in* 1911. [14 entries.]

I. (£5.)—R. NEVILLE GRENVILLE.

II. (£3.)—WILTS UNITED DAIRIES (LD.)

III. (£2.)—MISS M. THOMAS.

R.—WILTS UNITED DAIRIES (Ld.).

V.H.C.—C. AND G. PRIDEAUX.

H.C.—G. COOK.

C.—MRS. C. ROBERTS.

(The Prizes in Class 228 were given by the Monmouthshire Agricultural Education Committee.)

CLASS 228.—*Three Caerphilly Cheeses, made by a Student of the Monmouthshire County Council Dairy or Cheese Schools.* [10 entries.]

I. (£3.)—MISS A. JONES.

II. (£2.)—MISS B. GERRISH.

III. (£1.)—MISS J. BAKER.

R.—MISS D. ROBERTS.

V.H.C.—MISS M. JAMES.

H.C.—MISS R. JAMES.

C.—MRS. JOHNSON.—MRS. E. HEATH.

(The Prizes in Class 238 were given by the Glamorganshire County Council, and were open only to Competitors resident in the Administrative County of Glamorgan who had attended the Glamorgan County Council's Dairy School.)

CLASS 238.—*Three Caerphilly Cheeses.* [4 entries.]

I. (£2.)—MISS M. WATTS.

II. (£1.)—MISS C. EDWARDS.

III. (10s.)—MRS. E. WATTS.

R.—MISS HOWELLS.

CREAM CHEESE, BUTTER & CREAM.

(These Classes were not open to Professional Teachers.)

CLASS 204.—*Three Cream or other Soft Cheeses.* [12 entries.]

I. (£3.)—EARL OF PLYMOUTH.

II. (£2.)—MISS M. JAMES.

III. (£1.)—J. HILDICK.

R.—GLYNDE CREAMERIES (LTD).

H.C.—SIR G. A. COOPER, Bart.

CLASS 205.—*3lbs. of Fresh (or very slightly salted) Butter.* [32 entries.]

I. (£4.)—A. F. SOMERVILLE.

I. (£4.)—E. VAUGHAN.

II. (£3.)—MRS. L. R. MILDON.

II. (£3.)—EARL OF MOUNT EDGCUMBE.

III. (£2.)—MISS D. MACKWORTH.

III. (£2.)—Mrs. F. Ward.

IV. (£1.)—Miss Lewis.

IV. (£1.)—Mrs. A. Underwood.

R.—Mrs. M. Stokes.

Class 206.—*3lbs. of Fresh (or very slightly salted) Butter, made from scalded cream.* [12 entries.]

I. (£4.)—Mrs. F. Ward.

II. (£3.)—Earl of Mount Edgcumbe.

III. (£2.)—Mrs. L. R. Mildon.

R.—Mrs. A. A. Bere.

V.H.C.—A. F. Somerville.

H.C.—Mrs. E. Slade.

Class 207.—*3lbs. of Butter to which no salt whatever has been added, judged on the last day of the Show.* [18 entries.]

I. (£4.)—Mrs. F. Ward.

II. (£3.)—Mrs. A. A. Bere.

III. (£2.)—Sir J. Fuller, Bart.

IV. (£1.)—Mrs. L. R. Mildon.

R.—E. Vaughan.

Class 208.—*Not less than 12lbs. of Fresh Butter packed for transit.* [4 entries.]

I. (£3.)—Miss Lewis.

II. (£1 10s.)—Mrs. C. M. McIntosh.

H.C.—Miss M. G. Prideaux.

Class 209.—*12lbs. of Keeping Butter, in a jar or crock, delivered to the Secretary four weeks before the Show.* [9 entries.]

I. (£4.)—Mrs. A. A. Bere.

II. (£3.)—Mrs. L. R. Mildon.

III. (£2.)—Mrs. C. M. McIntosh.

R.—Miss Lewis.

H.C.—A. F. Basset.

Class 210.—4 *Half-pounds of Scalded Cream.* [6 entries.]

I. (£3.)—F. and H. E. Hornby.

II. (£2.)—Miss M. G. Prideaux.

III. (**£1.**)—Mrs. L. R. Mildon.

R.—E. Vaughan.

H.C.—W. R. Beer.

(**The Prizes in Class 229 were given by the Monmouthshire Agricultural Education Committee.**)

Class 229.—*3lbs. of Fresh (or very slightly salted) Butter, made by a student of the Monmouthshire County Council Dairy or Cheese School.* [15 entries.]

I. (**£2.**)—Miss D. Mackworth.

II. (**£1.**)—Mrs. E. A. Stead.

III. (**10s.**)—Miss F. S. Cox.

R.—Miss A. Cawley.

H.C.—Miss L. Davies.—Miss R. James.—Mrs. Johnson.

(**The Prizes in Classes 239 and 240 were given by the Glamorganshire County Council, and were open only to competitors resident in the Administrative County of Glamorgan, who had attended the Glamorgan County Council's Dairy School.**)

Class 239.—*3lbs. of Fresh Unsalted Butter*. [9 entries.]

I. (**£2.**)—Mrs. H. Thomas.

II. (**£1.**)—Mrs. E. Watts.

III. (**10s.**)—Miss M. Howells.

R.—Miss Hunter.

Class 240.—*3lbs. Fresh Slightly Salted Butter.* [11 entries.]

I. (**£2.**)—Miss M. Edwards.

II. (**£1.**)—Mrs. H. Thomas.

III. (**10s.**)—Miss Hunter.

R.—Mrs. E. Watts.

H.C.—Miss K. Evans.—Miss Howells.—Miss M. Howells.—Miss W. James.—Miss M. Watts.—Mrs. W. Watts.—Miss H. Williams.

COMPETITIONS.

BUTTER-MAKING.

(No winner of a first prize given by this Society for Butter-making during the last three years was eligible to compete in Classes 211 to 213.)

CLASS 211.—*For first year Students who had been through a course of instruction in Butter-making at any County Council School since the Society's last Show.* [27 entries.]

I. (**£4.**)—F. W. GOAD.

II. (**£3.**)—MISS J. ROSSER.

III. (**£1 10s.**)—MRS. P. R. PHILLIPS.

IV. (**£1.**)—MISS E. M. JAMES.

R.—MISS C. L. OWEN.

V.H.C.—MISS D. BICE.

H.C.—MISS E. E. HODGES.—MISS K. JARVIS.—MISS D. PRICE.—A. REESE.—MISS A. REESE—MISS G. B. TUCKETT.

C.—MISS M. BOWEN.—S. V. COX.—MISS M. DAVID.—MISS M. G. DAVID.—MISS M. EVANS.—MISS W. MARSH.—R. STRATTON.—T. THOMAS.

(The Prizes in Class 230 were given by the Monmouthshire Agricultural Education Committee, and were open only to Students who had attended the Monmouthshire County Council Dairy or Cheese School.)

CLASS 230.—*On the first day of the Show.* [17 entries.]

I. (**£2.**)—MISS D. PRICE.

II. (**£1 10s.**)—MISS L. DAVIES.

III. (**£1.**)—F. W. GOAD.

IV. (**10s.**)—MISS M. DAVIES.

R.—MISS F. PRICE.

V.H.C.—MISS G. JONES.—MISS M. KELLY.

H.C.—S. V. COX.—MISS B. GERRISH.—MISS E. M. JAMES.—MISS F. TUCKER.

C.—R. STRATTON.—MISS E. M. WILLIAMS.—MISS M. WILLIAMS.

(The Prizes in Class 241 were given by the Glamorgan County Council, and were open only to competitors resident in the Administrative County of Glamorgan, who had attended the Glamorgan County Council's Dairy School.)

CLASS 241.—*On the first day of the Show.* [10 entries.]

I. (**£2.**)—MRS. W. WATTS.

II. (**£1 10s.**)—MISS A. JONES.

III. (**£1.**)—MRS. E. WATTS.

R.—Miss E. G. David.

H.C.—Miss M. A. Griffiths.

C.—Miss M. G. David.—Miss G. Hopkin.

Class 212.—*For Men and Women, on the second day of the Show.* [46 entries.]

I. (£4.)—Mrs. W. Watts.

II. (£3.)—Miss W. Dunn.

III. (£1 10s.)—Miss A. Jones.

IV. (£1.)—Miss G. B. Tuckett.

R.—Miss G. Jones.

V.H.C.—Miss B. Coles.

H.C.—Miss D. Bice.—Miss E. K. Channon.—Miss J. Harding.—Miss E. Haywood.—Miss M. Kelly.—Miss M. Lawrence.—Mrs. Miles.—Miss E. M. Nicholas.—Miss C. L. Owen.—Miss C. Pantall.—Miss J. Rosser.—Mrs. E. Watts.—Miss C. Webb.—Miss F. H. White.—Miss G. E. White.—Miss H. Williams.

(The Prizes in Class 231 were given by the Monmouthshire Agricultural Education Committee, and were open only to Students who had attended the Monmouthshire County Council Dairy or Cheese School).

Class 231.—*On the second day of the Show.* [23 entries.]

I. (£2.)—Miss A. A. Rogers.

II. (£1 10s.)—Miss M. Davies.

III. (£1.)—Miss F. Tucker.

IV. (10s.)—Miss F. Price.

R.—Mrs. M. Lewis.

V.H.C.—Miss B. Gerrish.

H.C.—Miss H. Giles.—Miss E. R. Harris.—Miss G. Jones.—Miss M. Kelly.—Miss W. Marsh.—Miss E. Phillips.—Mrs. P. R. Phillips.—C. Williams.—Miss E. M. Williams.—Miss F. M. Williams.—Miss M. Williams.

(The Prizes in Class 242 were given by the Glamorgan County Council, and were open only to competitors resident in the Administrative County of Glamorgan, who had attended the Glamorgan County Council's Dairy School.)

Class 242.—*On the second day of the Show.* [12 entries.]

I. (£2.)—Miss J. Williams.

II. (£1 10s.)—Miss A. Jones.

III. (£1.)—Mrs. E. Watts.

IV. (10s.)—Miss H. Williams.

R. & V.H.C.—Miss E. G. David.

H.C.—Miss M. G. David.—Miss C. Edwards.—Miss M. A. Griffiths.—Miss G. Hopkin.—Miss M. Howells.

CLASS 213.—*For Men and Women, on the third day of the Show.* [46 entries.]

I. (£4.)—MISS A. PRICHARD.

II. (£3.)—MISS D. BICE.

III. (£1 10s.)—MISS F. TUCKER.

IV. (£1.)—MISS C. L. OWEN.

R. & V.H.C.—MISS C. PANTALL.

V.H.C.—MISS W. DUNN.—MISS J. JAMES.—MISS L. LUTEY.

H.C.—MISS E. K. CHANNON.—MISS B. COLES.—MISS L. DAVIES.—MISS C. EDWARDS.—MISS P. EVANS.—MISS E. S. FRANCIS.—MISS L. A. FRANCIS.—MISS M. A. GRIFFITHS.—MISS J. HARDING.—MISS E. HAYWOOD.—MISS G. HOPKIN.—MISS E. M. JAMES.—MISS A. JONES.—MRS. M. JONES.—MISS M. LAWRENCE.—MRS. MILES.—MISS E. M. NICHOLAS.—MISS F. PRICE.—MISS A. A. ROGERS.—MISS J. ROSSER.—MISS L. SMITH.—MISS H. M. TRENCHARD. MISS G. B. TUCKETT.—MRS. E. WATTS.—MISS C. WEBB.—MISS F. H. WHITE.—MISS G. E. WHITE.—MISS E. M. WILLIAMS.

(The Prizes in Class 232 were given by the Monmouthshire Agricultural Education Committee, and were open only to Students who had attended the Monmouthshire County Council Dairy or Cheese School.)

CLASS 232.—*On the third day of the Show.* [20 entries.]

I. (£2.)—MISS F. PRICE.

II. (£1 10s.)—MISS E. M. WILLIAMS.

III. (£1.)—MISS M. DAVIES.

IV. (10s.)—MISS E. M. JAMES.

R. & V.H.C.—MISS G. JONES.

V.H.C.—MISS L. DAVIES.—MISS E. E. HODGES.—R. STRATTON.

H.C.—S. V. COX.—MISS H. GILES.—F. W. GOAD.—MISS M. KELLY.—MISS W. MARSH.—MISS E. PHILLIPS.—MRS. P. R. PHILLIPS.

(The Prizes in Class 243 were given by the Glamorgan County Council, and were open only to competitors resident in the Administrative County of Glamorgan, who had attended the Glamorgan County Council's Dairy School.)

CLASS 243.—*On the third day of the Show.* [11 entries.]

I. (£2.)—MRS. E. WATTS.

II. (£1 10s.)—MISS A. JONES.

III. (£1.)—MISS M. A. GRIFFITHS.

IV. (10s.)—MISS H. WILLIAMS.

R. & V.H.C.—MISS C. EDWARDS.

H.C.—MISS M. G. DAVID.—MISS G. HOPKIN.—MISS W. JAMES.

CLASS 214.—*For Men and Women, on the fourth day of the Show.* (43 entries.]

I. (£4.)—MISS G. E. WHITE.

II. (£3.)—MISS F. TUCKER.

III. (£1 10s.)—MISS A. JONES.

IV. (£1.)—MISS G. B. TUCKETT.

R. & V.H.C.—MISS D. BICE.

V.H.C.—MISS A. PRICHARD.—MRS. E. WATTS.—MISS C. WEBB.—MISS H. WILLIAMS.

H.C.—MISS M. CAMBRAY.—MISS B. COLES.—MISS J. COLES.—MISS L. DAVIES.—MISS E. M. DUNN.—MISS P. EVANS.—MISS M. A. GRIFFITHS.—MISS J. HARDING.—MISS E. HAYWOOD.—MISS G. HOPKIN.—MISS E. M. JAMES.—MISS J. JAMES.—MISS R. JAMES.—MISS M. E. JEFFERIES.—MISS G. JONES.—MRS. M. JONES.—MISS M. KELLY.—MISS M. LAWRENCE.—MISS L. LUTEY.—MRS. MILES.—MISS E. M. NICHOLAS.—MISS C. L. OWEN.—MISS C. PANTALL.—MRS. P. R. PHILLIPS.—MISS F. PRICE.—MISS A. A. ROGERS.—MISS J. ROSSER.—MISS L. SMITH.—MISS H. M. TRENCHARD.—MISS F. H WHITE.

(The Prizes in Class 233 were given by the Monmouthshire Agricultural Education Committee, and were open only to students who had attended the Monmouthshire County Council Dairy or Cheese School.)

CLASS 233.—*On the fourth day of the Show.* [18 entries.]

I. (£2.)—MISS E. M. WILLIAMS.

II. (£1 10s.)—MISS E. M. JAMES.

III. (£1.)—MISS L. DAVIES.

IV. (10s.)—C. WILLIAMS.

R. & V.H.C.—MISS W. MARSH.

H.C.—MISS J. BAKER.—MISS M. DAVIES.—MISS E. R. HARRIS.—MISS R. JAMES.

(The Prizes in Class 244 were given by the Glamorgan County Council, and were open only to competitors resident in the Administrative County of Glamorgan, who had attended the Glamorgan County Council's Dairy School.)

CLASS 244.—*On the fourth day of the Show.* [9 entries.]

I. (£2.)—MISS A. JONES.

II. (£1 10s.)—MISS H. WILLIAMS.

III. (£1.)—MISS G. HOPKIN.

IV. (10s.)—MISS M. A. GRIFFITHS.

CHAMPION CLASS.

CLASS 215.—*For Winners of First and Second prizes in the Butter-making Classes, or at any previous meeting of the Society, on the fifth day of the Show.* [27 entries.]

I. (Gold Medal.)—MISS M. CAMBRAY.

II. (Silver Medal.)—MISS A. PRICHARD.

III. (Bronze Medal.)—MISS A. JONES.

R. & V.H.C.—MISS E. K. CHANNON.

V.H.C.—MISS E. M. DUNN.—MISS W. DUNN.—MISS M. EDWARDS.—MISS J. JAMES.—MISS R. JAMES.—MISS M. LAWRENCE.—MISS H. M. TRENCHARD. MRS. E. WATTS.—MISS H. WILLIAMS.—MISS J. WILLIAMS.—MISS J. ROSSER. —MRS. W. WATTS.—MISS G. E. WHITE.—MISS D. PRICE.—MISS L. DAVIES.— F. W. GOAD.—MISS A. A. ROGERS.—MISS M. DAVIES.—MISS F. PRICE.—MISS E. M. WILLIAMS.—MISS E. M. JAMES.—MISS F. TUCKER.—MISS D. BICE.

(The Prizes in Class 234 were given by the Monmouthshire Agricultural Education Committee, and were open only to Students who had attended the Monmouthshire County Council Dairy or Cheese School.)

CLASS 234.—*On the fifth day of the Show, for Students under* 18 *years of age.* [16 entries.]

I. (£2.)—MISS E. PHILLIPS.

II. (£1 10s.)—MISS D. ROBERTS.

III. (£1.)—T. B. EVANS.

IV. (10s.)—H. ATTEWELL.

R. & V.H.C.—MISS M. A. WELSH.

V.H.C.—MISS A. COWLEY.—MISS E. R. HARRIS.—MISS H. WILLIAMS.

H.C.—H. JEFFS.—MISS A. M. WILLIAMS.

C.—MISS A. JONES.—MISS O. LUCAS.—F. C. MEALING.—W. REESE.—MISS G. WILLIAMS.

(The Prizes in Class 245 were given by the Glamorgan County Council, and were open only to competitors resident in the Administrative County of Glamorgan, who had attended the Glamorgan County Council's Dairy School.)

CLASS 245.—*On the fifth day of the Show, for Students under* 18 *years of age.* [1 entry.]

III. (£1.)—MISS L. M. PRICE.

MILKING.

CLASS 216.—*For Men* 18 *years of age and over.* [14 entries.]

I. (£1 10s.)—H. H. HICKS.
II. (£1.)—W. ROSE.
III. (15s.)—J. CRYER.
IV. (10s.)—T. P. JONES.
R.—J. LOWE.
V.H.C.—G. ALLEN.
C.—J. FRICKER, Jun.—F. HAMPSHIRE.

Class 217.—*For Women* 18 *years of age and over.* [12 entries.]

I. (£1 10s.)—MRS. M. JONES.
II. (£1.)—MISS M. MORGAN.
III. (15s.)—MISS M. OWEN.
IV· (10s.)—MISS. M. DAVID.
R.—MISS E. M. NICHOLAS.
H.C.—MISS F. PRICE.
C.—MISS F. TUCKER.

CLASS 218.—*For Boys and Girls under* 18 *years of age.* [9 entries.]

I. (£1 10s.)—MISS G. B. TUCKETT.
II. (£1.)—MISS J. ROSSER.
III. (15s.)—H. ATTEWELL.
IV. (10s.)—MISS M. BOWEN.
R. & V.H.C.—MISS A. M. WILLIAMS.
V.H.C.—MISS G. WILLIAMS.
C.—MISS A. L. EDWARDS.

(The Prizes in Class 246 were given by Alderman T. W. David, Chairman of the Agricultural Committee of the Glamorganshire County Council.)

CLASS 246.—*For Men and Women resident in the County of Glamorgan.* [5 entries.]

I. (£1 10s.)—MISS A. JONES.
II. (£1.)—MISS W. JAMES.
III. (15s.)—MRS. W. WATTS.
IV. (10s.)—MISS C. EDWARDS.
H.C.—MISS M. M. JONES.

SHOEING.

CLASS 219.—*For Nag Horse Shoeing, by Smiths 25 years of age and over on the day of the competition, who had not previously won the First Prize in a corresponding Class at one of the Society's meetings, or a Champion Prize at any National or County Agricultural Society's Show, on the second day of the Show.* [28 entries.]

I. (£4.)—G. D. WELLAND.

II. (£3) and Special (£2)*—F. YOUNG.

III. (£2.)—R. JONES, R.S.S.

IV. (£1.)—W. WELLAND.

R., H.C., and Special (£1)*—E. EVANS.

H.C. and **R.** for Special*—W. ROOKE.

H.C.—D. J. LEWIS, R.S.S.—D. A. OWEN.

C.—T. PRICE, R.S.S.

CLASS 220.—*For Cart Horse Shoeing, by Smiths 25 years of age and over on the day of the competition, who had not previously won the First Prize in a corresponding Class at one of the Society's meetings, or a Champion Prize at any National or County Agricultural Society's Show, on the third day of the Show.* [34 entries.]

I. (£4) and Special (£2)†—F. YOUNG.

II. (£3.)—H. JONES, R.S.S.

III. (£2.)—G. HARRIS, R.S.S.

IV. (£1)—G. D. WELLAND.

R., H.C. and Special (£1†)—E. EVANS.

V.H.C. and **R.** for Special†—W. ROOKE.

V.H.C.—D. J. LEWIS, R.S.S.—T. NORTHWOOD, A.F.C.L.—W. R. PRICE.—W. WELLAND.

H.C.—D. DAVIES, R.S.S.—C. F. MESSENGER, R.S.S.—J. PUGSLEY.—D. J. THOMAS, R.S.S.—F. R. WHITEHORN.—J. J. WILLIAMS.

C.—W. D. GOODWAY, R.S.S.—H. W. MORGAN.—T. MORGAN.—D. A. OWEN.—T. PRICE, R.S.S.—W. SCOTFORD.

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* Given by Col. H. R. Homfray, M.F.H., for the best Competitors in Class 219, resident in the County of Glamorgan.

† Given by Alderman T. W David, Chairman of the Agricultural Committee of the Glamorgan County Council, for the best Competitors in Class 220, resident in the County of Glamorgan.

CLASS 221.—*For Shoe Making or Turning, by Smiths under 25 years of age on the day of the competition, the patterns and descriptions of the Shoes being supplied by the Judge, on the fourth day of the Show.* [8 entries.]

I. (£4.)—W. PRICE, R.S.S.

II. (£3.)—B. JONES.

III. (£1.)—G. WILKINS.

IV. (10s.)—W. J. JAMES.

R.—D. EVANS.

CLASS 222.—*For Shoe Making or Turning, by Smiths 25 years of age and over on the day of the competition, the patterns and descriptions of the Shoes being supplied by the Judge, on the fourth day of the Show.* [14 entries.]

I. (£4.)—C. S. DOUBLE.

II. (£3.)—T. NORTHWOOD, A.F.C.L.

III. (£2.)—H. JONES, R.S.S.

IV. (£1.)—T. MORGAN.

R. & V.H.C.—E. EVANS.

V.H.C.—J. PUGSLEY.

C. F. R. WHITEHORN.

(The Prizes in Classes 235 to 237 were given by the Monmouthshire Agricultural Education Committee and were only open to Students who had attended the Classes of the Monmouthshire County Council.)

CLASS 235.—*Nag Horse Shoeing, on the fifth day of the Show.* [10 entries.]

I. (£2.)—H. JONES, R.S.S.

II. (£1 10s.)—F. R. WHITEHORN.

III. (£1.)—R. JONES, R.S.S.

IV. (10s.)—J. REES. R.S.S.

R. & V.H.C.—F. THOMAS.

V.H.C.—C. DAVIES.—D. EVANS.

H.C.—W. FARR.

CLASS 236.—*Cart Horse Shoeing, on the fifth day of the Show.* [11 entries.]

I. (£2.)—H. JONES, R.S.S.

II. (£1 10s.)—F. R. WHITEHORN.

III. (£1.)—R. JONES, R.S.S.

IV. (10s.)—W. Farr.

R. & V.H.C.—T. J. Simmonds.

V.H.C.—C. F. Messenger, R.S.S.—F. Thomas.

H.C.—D. Evans.

C.—T. Davies.

Class 237.—*Nag Horse Shoeing, by Smiths not over 22 years of age on the day of the competition, on the fifth day of the Show.* [6 entries.]

I. (£2.)—A. Wilband.

II. (£1 10s.)—J. T. Rees.

III. (£1.)—E. H. Bigham.

IV.—**(10s.)**— W. Farr.

R. & V.H.C.— H. W. Payne.

H.C.—A. Crockett.

TIMBERING AND SPLICING

(Given by the Cardiff Local Committee.)

Class 223.—*Timbering Competition, on the fifth day of the Show. Open to Timbermen and Colliers.* [16 entries.]

I (£3) —W. Thomas.

II (£2)—G. Nash.

III (£1)—R. Evans.

R.—D. Davies.

Class 224.—*Colliery Rope Splicing, on the fifth day of the Show.* [10 entries.]

I. (£3.) —F. Thomas.

II. (£2.)—J. Davies.

III. (£1.)—F. J. H. Dare.

R.—T. Morgan.

POULTRY.

(Under Poultry Club Rules.)

(The Birds in Classes 1 to 22 and 25 to 51 must have been hatched previous to January 1, 1911.)

Class 1.—ANY DISTINCT BREED, EXCEPT BANTAMS—COCK AND FOUR HENS, BRED IN 1909 OR 1910, the Property of one Exhibitor, Mated for Breeding. [10 entries.]

I. (£5.)—W. Firth.

II. (£3.)—S. W. Thomas, *Brahmas.*

III. (£2.)—J. H. Baker & Sons.

R.—A. C. Major, *Dorkings.*

V.H.C.—H. Cameron, *Indian Game.*—Lee & Demaid, *Old English Game.*—T. W. Morgan, *Game.*

H.C.—H. S. Hambrey, *Black Orpingtons.*

Class 2.—COCHIN, COCK. [5 entries.]

I. (£1.)—J. Edwards.

II. (15s.)—J. E. D. Moysey.

R.—J. B. Gilbert.

V.H.C.—A. C. Buckmaster.

H.C.—J. B. Gilbert.

Class 3.—COCHIN, HEN. [3 entries.]

I. (£1.)—M. Lindner.

II. (15s.)—J. Edwards.

R.—A. C. Buckmaster.

Class 4.—BRAHMA, COCK. [4 entries.]

I. (£1.)—J. C. Tozer.

II. (15s.)—S. W. Thomas.

R.—H. L. Popham.

V.H.C.—A. C. Buckmaster.

Class 5.—BRAHMA, HEN. [2 entries.]

I. (£1.)—S. W. Thomas.

R.—J. Edwards.

CLASS 6.—PLYMOUTH ROCK, COCK. [11 entries.]

I. (£1.)—R. ANTHONY.
II. (15s.)—P. B. GOVETT.
III. (10s.)—T. J. ANDREW.
R.—J. M. CHANDLER.
V.H.C.—MRS. E. CLARK.—M. LINDNER.
H.C.—G. S. WHITTAKER.

CLASS 7.—PLYMOUTH ROCK, HEN. [5 entries.]

I. (£1.)—T. J. ANDREW.
II. (15s.)—R. ANTHONY.
R.—J. M. CHANDLER.
V.H.C.—ELLIS BROS.

CLASS 8.—ORPINGTON (BUFF), COCK. [13 entries.]

I. (£1.)—P. B. GOVETT.
II. (15s.)—F. BLOOMER.
III. (10s.)—R. ANTHONY.
R.—W. H. COOK.
V.H.C.—T. EVANS.—W. FURLEY.—LORD ROTHSCHILD.
H.C.—T. FAWKES.—W. JENKINS.
C.—J. T. JONES.

CLASS 9.—ORPINGTON (BUFF), HEN. [6 entries.]

I. (£1.)—R. ANTHONY.
II. (15s.)—W. H. COOK.
III. (10s.)—G. PONTING.
R.—F. BLOOMER.
V.H.C.—D. B. EDWARDS.
H.C.—D. B. EDWARDS.

CLASS 10.—ORPINGTON (BLACK), COCK. [12 entries.]

I. (£1.)—E. S. BLAKE.
II. (15s.)—T. FAWKES.
III. (10s.)—G. TEMPLEMAN.
R.—W. BURCH.
V.H.C.—T. FAWKES.—MRS. S. HAYWARD.—M. LINDNER.
H.C.—J. JAMES.

CLASS 11.—ORPINGTON (BLACK), HEN. [8 entries.]

I. (£1.)—W. H. COOK.
II. (15s.)—T. FAWKES.
III. (10s.)—J. JAMES.
R.—M. LINDNER.
V.H.C.—F. BLOOMER.
C.—T. B. WILLIAMS.

CLASS 12.—ORPINGTON (WHITE), COCK. [6 entries.]

I. (£1.)—M. LINDNER.
II. (15s.)—MISS ARMSTRONG.
III. (10s.)—F. BLOOMER.
V.H.C.—M. LINDNER.

CLASS 13.—ORPINGTON (WHITE), HEN. [7 entries.]

I. (£1.)—M. LINDNER.
II. (15s.)—H. CARPENTER.
III. (10s.)—W. H. COOK.
R.—M. LINDNER.
V.H.C.—W. BURGE.
H.C.—LADY FITZGERALD.

CLASS 14.—MINORCA (BLACK), COCK. [10 entries.]

I. (£1.)—W. H. COOK.
II. (15s.)—A. G. PITTS.
III. (10s.)—W. A. GODFREE & SON.
R.—A. TUCKER.
V.H.C.—T. HAWKINS.
H.C.—C. FORD.—FURSLAND BROS.—W. HOLTON.

CLASS 15.—MINORCA (BLACK), HEN. [12 entries.]

I. (£1.)—W. HOLTON.
II. (15s.)—FURSLAND BROS.
III. (10s.)—FURSLAND BROS.
R.—W. A. GODFREE.
V.H.C.—F. NORMAN.—A. G. PITTS.
H.C.—F. NORMAN.—C. SMITH.

CLASS 16.—MINORCA (WHITE), COCK OR HEN.

[NO ENTRY.]

CLASS 17.—SUSSEX, COCK. [13 entries.]

I. (£1.)—E. T. B. COPPARD.

II. (15s.)—J. BAILY & SON.

III. (10s.)—N. ERMEN.

R.—W. CUBITT.

V.H.C—J. BAILY & SON.—LORD ROTHSCHILD.—F. H. WHEELER.

H.C.—W. CUBITT.—SANDERSON BROS.—F. H. WHEELER.

CLASS 18.—SUSSEX, HEN. [14 entries.]

I. (£1.)—A. H. LUCAS.

II. (15s.)—W. S. TUCKER.

III. (10s.)—J. BAILY & SON.

R.—N. ERMEN.

V.H.C.—J. BAILY & SON.—LORD ROTHSCHILD. —SANDERSON BROS.—F. H. WHEELER.

H.C.—E. T. B. COPPARD.—W. STANAWAY. —F. H. WHEELER.—F. H. WHEELER.

CLASS 19.—DORKING (ANY OTHER VARIETY), COCK. [5 entries.]

I. (£1.)—A. C. MAJOR.

II. (15s.)— J. HARRIS.

R.—A. C. MAJOR.

V.H.C.—MISS E. THOMAS.

H.C.—MISS A. GREATWOOD.

CLASS 20.—DORKING (ANY OTHER VARIETY), HEN. [3 entries.]

I. (£1.)—J. HARRIS.

II. (15s.)—A. C. MAJOR.

R.—A. C. MAJOR.

CLASS 21.—FAVEROLLES, COCK. [9 entries.]

I. (£1.)—T. FAWKES.

II. (15s.)—T. H. JONES-PARRY.

III. (10s.)—G. BETTS.

R.—T. C. BYRNE.

V.H.C.—C. H. BRADLEY.

H.C.—MISS E. SEDGWICK.—D. SHAKESHAFT.

CLASS 22.—FAVEROLLES, HEN. [8 entries.]

I. (£1.)—G. BETTS.

II. (15s.)—C. H. BRADLEY.

III. (10s.)—C. H. BRADLEY.

R.—T. H. JONES-PARRY.

V.H.C.—T. C. BYRNE.

H.C.—T. FAWKES.

(In Classes 23 and 24 the birds must have been hatched after December 31, 1910, and must not have moulted all the chicken flight feathers of the wing.)

CLASS 23.—COCHIN, BRAHMA, PLYMOUTH ROCK, ORPINGTON, LANGSHAN, SUSSEX OR DORKING, COCKEREL. [9 entries]

I. (£1.)—A. C. BUCKMASTER, *White Cochin*, January 1.

II. (15s.)— T. WOODS, *White Orpington*, January 9.

III. (10s.)—H. CARPENTER, *White Orpington*, January.

R.—W. BURCH, *Black Orpington*, January 16.

V.H.C.—A. C. MAJOR, *Dorking*, January 6.

H.C.—H. J. BOND, *White Orpington*, January 1.—R. NORTHCOTT, *Orpington*, January 21.

CLASS 24.—COCHIN, BRAHMA, PLYMOUTH ROCK, ORPINGTON, LANGSHAN, SUSSEX, OR DORKING, PULLET. [11 entries.]

I. (£1.)—R. ANTHONY.

II. (15s.)—T. FAWKES, *Orpington*, January 11.

III. (10s.)—W. H. HUNT, *White Orpington*, January 2.

R.—H. CARPENTER, *White Orpington*, January.

V.H.C.—W. FISHER, *Buff*, January 25.—W. FISHER, *Buff*, January 25.—MRS. S. HAYWARD, *White Orpington*, January 15.—A. C. MAJOR, *Dorking*, January 2.

H.C.—LEWIS BROS., *White Plymouth Rock*, January 25.

CLASS 25.—LANGSHAN, COCK. [6 entries.]

I. (£1.)—R. ANTHONY.

II. (15s.)— H. WALLIS.

III. (10s.)—M. LINDNER.

R.—R. ANTHONY.

V.H.C.—R. A. SPRENT.

H.C.—A. GOODWIN.

CLASS 26.—LANGSHAN, HEN. [5 entries.]

I. (£1.)—R. ANTHONY.

II. (15s.)—R. ANTHONY.

R.—H. WALLIS.
V.H.C.—M. LINDNER.
H.C.—H. WALLIS.

CLASS 27.—WYANDOTTE (SILVER OR GOLD LACED), COCK. [9 entries.]

I. (£1.)—S. CLIMAS.
II. (15s.)—R. ANTHONY.
III. (10s.)—T. C. HEATH.
V.H.C.—T. C. PINNIGER.
H.C.—D. DAVIES.—D. JONES.—T. C. PINNIGER.

CLASS 28.—WYANDOTTE (SILVER OR GOLD LACED), HEN. [6 entries.]

I. (£1.)—S. CLIMAS.
II. (15s.)—R. ANTHONY.
III. (10s.)—S. CLIMAS.
R.—A. J. BROCK.

CLASS 29.—WYANDOTTE (WHITE), COCK. [7 entries.]

I. (£1.)—R. ANTHONY.
II. (15s.)—LADY FITZGERALD.
III. (10s.)—MRS. S. HAYWARD.
V.H.C.—A. J. BROCK.
H.C.—W. HANCOCK.
C.—G. L. WATKINS.

CLASS 30.—WYANDOTTE (WHITE), HEN. [8 entries.]

I. (£1.)—R. ANTHONY.
II. (15s.)—W. REED.
III. (10s.)—E. STENNER.
R.—MISS W. FARMER.
V.H.C.—J. FRANCIS.
H.C.—W. HANCOCK.—G. L. WATKINS.

CLASS 31.—WYANDOTTE (ANY OTHER VARIETY), COCK. [11 entries.]

I. (£1.)—T. C. HEATH.
II. (15s.)—J. E. D. MOYSEY.
III. (10s.)—HEARN BROS.
V.H.C.—R. WATSON.
H.C.—R. ANTHONY.—H. GUNN.—G. L. WATKINS.—G. L. WATKINS.

CLASS 32.—WYANDOTTE (ANY OTHER VARIETY), HEN. [8 entries.]

I. (£1.)—T. C. HEATH.
II. (15s.)—R. ANTHONY.
III. (10s.)—H. WRIGHT.
V.H.C.—M. PICKERING.
H.C.—H. GUNN.—G. L. WATKINS.—R. WATSON.

CLASS 33.—LEGHORN (WHITE), COCK [5 entries.]

I. (£1.)—R. ANTHONY.
II. (15s.)—T. REES.
R.—T. FAWKES.
V.H.C.—REV. R. CHICHESTER.—J. H. SPURRY.

CLASS 34.—LEGHORN (WHITE), HEN. [7 entries.]

I. (£1.)—G. B. HINGE.
II. (15s.)— A. J. HARRIS.
III. (10s.)—R. ANTHONY.
R.—MRS. E. A. EDWARDS.
V.H.C.—I. J. JONES.
H.C.—COLMAN & JAMES.—W. J. HOLLOWAY.

CLASS 35.—LEGHORN (ANY OTHER VARIETY), COCK. [6 entries.]

I. (£1.)—R. ANTHONY.
II. (15s.)—W. O. STANBURY.
III. (10s.)—E. L. SIMON.
V.H.C.—W. JEFFRIES.
H.C.—E. L. SIMON.

CLASS 36.—LEGHORN (ANY OTHER VARIETY), HEN. [5 entries.]

I. (£1.)—R. NORTHCOTT.
II. (15s.)—F. G. EDWARDS.
R.—R. ANTHONY.

CLASS 37.—HAMBURG (BLACK), COCK. [7 entries.]

I. (£1.)—J. AUCKLAND.
II. (15s.)—C. E. PICKLES.
III. (10s.)—R. P. INSALL.
V.H.C.—M. LINDNER.
H.C.—R. ANTHONY.—W. GRAVES.

CLASS 38.—HAMBURG (BLACK), HEN. [8 entries.]

I. (£1.)—C. E. PICKLES.

II. (15s.)—E. W. DAVIES.

III. (10s.)—D. W. LEWIS.

V.H.C.—E. W. DAVIES.—M. LINDNER.—W. SNELL.

H.C.—J. AUCKLAND.

CLASS 39.—HAMBURG (ANY OTHER VARIETY), COCK. [5 entries.]

I. (£1.)—R. ANTHONY.

II. (15s.)—T. NURSE.

R.—C. E. PICKLES.

H.C.—MISS ASHWELL.—F. E. THOMAS.

CLASS 40.—HAMBURG (ANY OTHER VARIETY), HEN. [5 entries.]

I. (£1.)—W. SNELL.

II. (15s.)—C. E. PICKLES.

R.—F. E. THOMAS.

V.H.C.—W. H. AVERY.

CLASS 41.—OLD ENGLISH GAME (SPLASHED OR SPANGLED), COCK. [7 entries.]

I. (£1.)—W. FIRTH.

II. (15s.)—MASON & EDWARDS.

III. (10s.)—T. C. HEATH.

R.—J. PRIOR.

H.C.—COL. H. LEWIS.—M. LINDNER.—MASON & EDWARDS.

CLASS 42.—OLD ENGLISH GAME (SPLASHED OR SPANGLED), HEN. [7 entries.]

I. (£1.)—W. FIRTH.

II. (15s.)—T. C. HEATH.

III. (10s.)—MASON & EDWARDS.

R.—G. HODGES.

V.H.C.—G. HODGES.

H.C.—J. E. D. MOYSEY.—J. PRIOR.

CLASS 43.—OLD ENGLISH GAME (ANY OTHER VARIETY), COCK. [13 entries.]

I. (£1.)—T. C. HEATH.

II. (15s.)—W. FIRTH.

III. (**10s.**)—J. E. D. Moysey.

V.H.C.—T. Jones.—Mason & Edwards.

H.C.—E. W. Davies.—W. S. Fletcher.—Lee & Demaid.—Col. H. Lewis. —W. H. Lewis.—W. H. Lewis.

Class 44.—OLD ENGLISH GAME (Any Other Variety), HEN. [4 entries.]

I. (**£1.**)—W. Firth.

II. (**15s.**)—T. C. Heath.

R.—Mason & Edwards.

V.H.C.—E. W. Davies.

Class 45.—INDIAN GAME, COCK. [12 entries.]

I. (**£1.**)—H. Cameron.

II. (**15s.**)—W. Firth.

III. (**10s.**)—S. Diamond.

V.H.C.—W. Norton.

H.C.—E. J. Jarrett.—Lord Rothschild.

Class 46.—INDIAN GAME, HEN. [7 entries.]

I. (**£1.**)—W. J. Camp.

II. (**15s.**)—W. Firth.

III. (**10s.**)—H. Jones.

V.H.C.—H. Cameron.—S. Diamond.—E. Looker.

Class 47.—FRENCH (Excluding Faverolles), COCK. [4 entries.]

I. (**£1.**)—S. W. Thomas, *Houdan.*

II. (**15s.**)—S. W. Thomas, *Houdan.*

R.—H. Edye, *Houdan.*

V.H.C.—P. Hanson, *Houdan.*

Class 48.—FRENCH (Excluding Faverolles), HEN. [4 entries.]

I. (**£1.**)—S. W. Thomas, *Houdan.*

II. (**15s.**)—S. W. Thomas, *Houdan.*

R.—P. Hanson, *Houdan.*

V.H.C.—H. Edye.

Class 49.—ANY OTHER DISTINCT BREED (not Previously Mentioned) COCK. [13 entries]

I. (**£1.**)—W. Firth, *Game.*

II. (**15s.**)—G. C. Dennis, *Malay.*

III. (**10s.**)—Hoskin Bros.

R.—H. CAMERON, *Malay.*

V.H.C.—J. AUCKLAND, *Black Spanish.*—J. JOHNS, *Brown Red Game.*—H. MORRIS, *Ancona.*—F. R. STEPHENS, *Black Sumatra Game.*

H.C.—D. B. CHESTERFIELD, *Black Sumatra Game.*—W. W. HALE, *Rhode Island Red.*—MISS B. H. STANTON, *Rhode Island Red.*

CLASS 50.—ANY OTHER DISTINCT BREED (NOT PREVIOUSLY MENTIONED) HEN. [10 entries.]

I. (**£1.**)—G. C. DENNIS, *Malay.*

II. (**15s.**)—W. FIRTH, *Game.*

III. (**10s.**)—W. E. THOMAS, *Old English Spangled Bantam.*

V.H.C.—G. C. DENNIS, *Malay.*

H.C.—J. AUCKLAND, *Black Spanish.*—D. B. CHESTERFIELD, *Black Sumatra Game.*—T. FAWKES.—W. SNELL, *Brown Red Game.*

CLASS 51.—COCK AND HEN OF ANY PURE BREEDS BEST MATED TO PRODUCE TABLE POULTRY. [5 entries.]

I. (**£1.**)—J. R. R. MITCHELL, *Indian Game-Dorking.*

II. (**15s.**)—G. TEMPLEMAN, *Indian Game-Dorking.*

R.—MRS. S. HAYWARD, *Indian Game-Dorking.*

V.H.C.—J. BAILY & SON, *Sussex.*

(In Classes 52 to 59 the birds must have been hatched after December 31, 1910, and must not have moulted all the chicken flight feathers of the wing.)

CLASS 52.—MINORCA, ANCONA, WYANDOTTE, LEGHORN, HAMBURG, FAVEROLLES OR FRENCH, COCKEREL. [13 entries).

I. (**£1.**)—H. MORRIS, *Ancona,* January 2.

II. (**15s.**)—A. J. HARRIS, *Brown Leghorn,* January 15.

III. (**10s.**)—C. F. MACMULLEN, *Wyandotte,* January 2.

V.H.C.—A. J. BROCK, *Gold,* January 1.—R. NORTHCOTT, *Ancona,* January 26.—G. L. WATKINS, *Black Wyandotte,* January 2.

H.C.—ARNOTT & BREWER, *White Wyandotte,* January 30.—H. J. BOND, *White Wyandotte,* January 1.—H. J. FIER, *Leghorn,* January 9.—W. E. H. HANCOCK, *White Wyandotte,* January 10.—A. HOWARD, *White Wyandotte,* January 31.

CLASS 53.—MINORCA, ANCONA, WYANDOTTE, LEGHORN, HAMBURG, FAVEROLLES, OR FRENCH, PULLET. [14 entries.]

I. (**£1.**)—J. R. R. MITCHELL, *Hamburg,* January 6.

II. (**15s.**)—R. NORTHCOTT, *Ancona,* January 26.

III. (**10s.**)—C. H. BRADLEY, *Faverolles,* January 7.

R.—T. Fawkes, *Wyandotte*, January 13.

V.H.C.—T. C. Heath, *Wyandotte.*—E. J. Thorne, January 1.—G. L. Watkins, *Black Wyandotte*, January 2.

H.C.—R. Anthony.—Arnott & Brewer, *White Wyandotte*, January 30.—A. J. Brock, *Gold*, January 1.—H. J. Fier, *Leghorn*, January 9.

Class 54.—GAME, MALAY, OR ANY OTHER DISTINCT BREED (not Previously Mentioned), COCKEREL. [5 entries.]

I. (£1.)—G. C. Dennis, *Malay.*

II. (15s.)—W. Hambly, *Indian Game*, January 2.

R.—Miss B. H. Stanton, *Rhode Island Red*, January 17.

H.C.—R. J. Browning, *Rhode Island Red.*—W. Pickering, *Malay*, January 21.

Class 55.—GAME, MALAY, OR ANY OTHER DISTINCT BREED (not Previously Mentioned), PULLET. [3 entries.]

I. (£1.)—R. J. Browning, *Rhode Island Red.*

II. (15s.)—G. C. Dennis, *Malay.*

LIVE TABLE POULTRY

Class 56.—PAIR OF COCKERELS OF ANY PURE BREED. [5 entries.]

I. (£1.)—M. Lindner.

II. (15s.)—E. T. B. Coppard, *Sussex*, February.

R.—Miss M. Dolben, *White Orpington*, January 7.

V.H.C.—Mrs. S. Hayward, *Cuckoo Orpingtons.*

H.C.—J. Baily & Son, *Sussex.*

Class 57.—PAIR OF PULLETS OF ANY PURE BREED. [5 entries.]

I. (£1.)—Mrs. S. Hayward, *Cuckoo Dorkings.*

II. (15s.)—J. Baily & Son, *Sussex.*

R.—W. H. Hunt, *White Orpington*, January 2.

V.H.C.—M. Lindner.—A. C. Major, *Dorkings*, January 6.

Class 58.—PAIR OF CROSS-BRED COCKERELS. [1 entry.]

II. (15s.)—Mrs. S. Hayward, *Indian Game-Orpington.*

Class 59.—PAIR OF CROSS-BRED PULLETS. [3 entries.]

I. (£1.)—Mrs. S. Hayward, *Indian Game-Orpington.*

III. (10s.)—G. Templeman, *Dorking Cross*, January 10.

R.—Miss E. Sedgwick, *Faverolles-Orpington*, January 9.

SELLING CLASSES.

CLASS 60.—ANY DISTINCT BREED, COCK OR COCKEREL (PRICE NOT TO EXCEED £1 1s.) [12 entries.]

I. (£1.)—W. M. DAVIES, *Cochin.*

II. (15s.)—W. J. CAMP, *Indian Game.*

III. (10s.)—T. PARRY, *Black Orpington.*

R.—MASON & EDWARDS, *Old English Game.*

V.H.C.—R. ANTHONY.—W. FIRTH.—C. HARRIS, *Indian Game.*—COL. H. LEWIS.—J. E. D. MOYSEY.—W. SNELL. *Minorca.*

H.C.—G. ROSSER.

CLASS 61.—ANY DISTINCT BREED, HEN OR PULLET (PRICE NOT TO EXCEED £1 1s.) [11 entries.]

I. (£1.)—J. R. R. MITCHELL, *Hamburg.*

II. (15s.)—R. ANTHONY.

III. (10s.)—J. E. D. MOYSEY.

R.—MASON & EDWARDS, *Old English Game.*

V.H.C.—H. CAMERON, *Malay.*—W. GRAVES, *Indian Game.*—T W. MORGAN, *Game.*

H.C.—W. FIRTH.—W. HANCOCK, *Black Orpington.* T. H. JONES-PARRY, *White Orpington..*

SPECIAL PRIZES.

Given by the Poultry Club, under Conditions stated on Entry Form.
Challenge Cups, value £10 10s. each .—

(*a*).—*For the best Cock or Cockerel in the Poultry Classes, the property of a member of the Poultry Club.* 1.—J. EDWARDS.

(*b*).—*For the best Hen in the Poultry Classes, ditto, ditto.* 1.—M. LINDNER.

Challenge Cups, value £5 5s. each :—

(*c*).—*For the best Orpington, the property of a member of the Poultry Club.* 1.—M. LINDNER.

(*d*).—*For the best Wyandotte, ditto, ditto.* 1.—S. CLIMAS.

(*e*).—*For the best Leghorn, ditto, ditto.*—1. R. ANTHONY.

(*f*).—*For the best Plymouth Rock, ditto, ditto.* 1.—T. J. ANDREW.

(*g*).—*For the best Minorca, ditto, ditto.*—1.—W. HOLTON.

(*h*).—*For the best Langshan, ditto, ditto.* 1.—R. ANTHONY.

(*i*).—*For the best Sussex, ditto, ditto.* 1.—A. H. LUCAS.

A Gold Medal for best Cock in the Poultry Classes, the property of a member of the Poultry Club. 1.—J. EDWARDS.

A Gold Medal for the best Hen, ditto, ditto. 1.—M. LINDNER.

A Gold Medal for the best Cockerel, ditto, ditto. 1.—G. C. DENNIS.

A Gold Medal for the best Pullet, ditto. ditto. 1.—J. R. R. MITCHELL.

DUCKS, GEESE, AND TURKEYS

CLASS 62.—DRAKE OR DUCK (*Aylesbury*). [9 entries]

I. (£1.)—MRS. R. JONES.
II. (15s.)—M. LINDNER.
III. (10s.)—J. E. D. MOYSEY.
R.—R. ANTHONY.
V.H.C.—E. A. DAVIES.
H.C.—J. DAVIES.—MISS M. FISHER.

CLASS 63.—DRAKE OR DUCK (*Rouen*). [5 entries.]

I. (£1.)—R. ANTHONY.
II. (15s.)—J. E. D. MOYSEY.
R.—W. H. THOMAS.
V.H.C.—J. R. R. MITCHELL.

CLASS 64.—DRAKE OR DUCK (*Pekin*). [2 entries.]

I. (£1.)—C. D. MILNE.
R.—C. D. MILNE.

CLASS 65.—GANDER OR GOOSE. [4 entries.]

I. (£1.)—W. F. SNELL.
III. (10s.)—W. F. SNELL.

CLASS 66.—TURKEY, COCK OR HEN. [1 entry.]

I. (£1.)—W. F. SNELL.

DEAD TABLE POULTRY.

(*Forwarded alive, and to be killed and plucked by a Poulterer acting for the Society.*)

(In Classes 67 to 71 the birds must have been hatched after December 31, 1910, and must not have moulted all the chicken flight feathers of the wing.)

CLASS 67.—PAIR OF COCKERELS OF ANY PURE BREED. [3 entries.]

I. (£1.)—F. H. WHEELER, *Sussex*, January 3.
II. (15s.)—F. H. WHEELER, *Sussex*, January 3.
R.—F. H. WHEELER, *Sussex*, January 3.

CLASS 68.—PAIR OF PULLETS OF ANY PURE BREED. [3 entries.]

II. (15s.)—F. H. WHEELER, *Sussex*, January 9.

III. (10s.)—F. H. WHEELER, *Sussex*, January 13.

CLASS 69.—PAIR OF CROSS-BRED COCKERELS. [5 entries.]

I. (£1.)—F. H. WHEELER, *Sussex-Orpington*, January 13.

II. (15s.)—EARL OF PLYMOUTH, *Indian Game-Sussex*, January 10.

R.—EARL OF PLYMOUTH, *Indian Game-Orpington* January 3.

H.C.—MRS. S. HAYWARD, *Indian Game-Orpington.*

CLASS 70.—PAIR OF CROSS-BRED PULLETS. [4 entries.]

I. (£1.)—MRS. S. HAYWARD, *Indian Game-Orpington.*

II. (15s.)—EARL OF PLYMOUTH, *Indian Game-Sussex*, January 10.

R.—F. H. WHEELER, *Sussex-Orpington*, January 13.

CLASS 71.—PAIR OF DUCKLINGS.

NO ENTRY.

FORESTRY.

CLASS 1.—FOR A GENERAL COLLECTION OF EXHIBITS ILLUSTRATIVE OF FORESTRY. [7 entries.]

I. (Gold Medal).—DUKE OF WELLINGTON, K.G., Stratfield Saye, Hants.

II. (Silver Medal).—DAME E. F. SMYTH, Ashton Court, Bristol.

III. (Bronze Medal).—EARL STANHOPE, Chevening House, near Sevenoaks, Kent.

H.C.—C. COLTMAN ROGERS, Stanage Park, Brampton Bryan—MISS E. C. TALBOT, Margam Park, Glamorganshire.

CLASS 2.—FOR BOARDS OF SCOTS PINE (*Pinus sylvestris*). [4 entries.]

I. (Silver Medal).—THE EARL OF CARNARVON, Highclere, Newbury.

II. (Bronze Medal).—THE EARL CAWDOR, Golden Grove Estate, Carmarthenshire.

CLASS 3.—FOR BOARDS OF LARCH (*Larix europea*). [5 entries.]

I. (Silver Medal).—THE EARL OF CARNARVON, Highclere, Newbury.

II. Bronze Medal).—MISS E. C. TALBOT, Margam Park, Glamorganshire.

CLASS 4.—FOR BOARDS OF NORWAY SPRUCE (*Picea excelsa*). [5 entries,]

I. (Silver Medal).—DAME E. F. SMYTH, Ashton Court, Bristol.

II. (Bronze Medal).—THE EARL OF CARNARVON, Highclere, Newbury.

CLASS 5.—FOR BOARDS OF ASH (*Fraxinus Excelsior*), Oak (*Quercus robur*) and Elm (*Ulmus Campestris*). [4 entries.]

I. (Silver Medal).—THE EARL CAWDOR, Golden Grove Estate, Carmarthenshire.

CLASS 6.—FOR BOARDS OF ANY THREE NON-CONIFEROUS TIMBERS OTHER THAN THE ABOVE. [4 entries.]

II. (Bronze Medal).—MISS E. C. TALBOT, Margam Park, Glamorganshire.

CLASS 7.—FOR A 9-FT. FIELD GATE, MANUFACTURED UPON AN ESTATE FROM HOME-GROWN TIMBER, SHOWN IN WORKING ORDER. THE WOOD NOT TO BE DRESSED WITH A PRESERVATIVE, CREOSOTED, OR PAINTED. [2 entries.]

I. (Silver Medal).—THE EARL CAWDOR, Golden Grove Estate, Carmarthenshire.

II. (Bronze Medal).—MISS E. C. TALBOT, Margam Park, Glamorganshire.

CLASS 8.—FOR EXHIBITS ILLUSTRATIVE OF FORESTRY CONTRIBUTED BY INSTITUTIONS OR BY ESTATES NOT DESIROUS OF ENTERING IN COMPETITIVE CLASSES.

H.C.—National Fruit and Cider Institute, Long Ashton, Bristol.

H.C.—The Earl of Plymouth, St Fagans, Cardiff.

H.C.—Royal Botanic Gardens, Kew.

CLASS 9.—FOR EXAMPLES OF CREOSOTING BY PRESSURE OR ABSORPTION AND OF OTHER METHODS OF PRESERVATION. [1 entry.]

I. (Silver Medal).—MISS E. C. TALBOT, Margam Park, Glamorganshire.

NATURE STUDY.

Certificates of Merit were awarded to :—

BATH, OLDFIELD BOYS' COUNCIL SCHOOL.

THE BARHAM MEMORIAL DAY SCHOOL, LETTERSTON.

TAUNTON, BISHOP FOX'S GIRLS' HIGH SCHOOL.

WESTON-SUPER-MARE, ST. JOHN'S PRIMARY BOYS' SCHOOL.

Bath and West and Southern Counties Society.

OBJECTS OF THE SOCIETY AND PRIVILEGES OF MEMBERSHIP.

ANNUAL EXHIBITIONS.

THE Society annually holds an Exhibition in some city or town in England or Wales. Each section of the Society's district is visited at intervals, so that most Members have an opportunity of seeing the Show in their own neighbourhood every few years. Prizes to a large amount are given for Horses, Cattle, Sheep, Pigs, Farm Produce, &c. Provision is also made for the exhibition of Agricultural Implements and Machinery, Seeds, Cattle Foods, Artificial Manures, and articles of general utility. A substantially built and completely equipped Working-Dairy on a large scale is a special feature of these Exhibitions. Here explanatory demonstrations, and comparative tests of implements and processes are carried on with the assistance of well-known practical and scientific experts, and Butter-making Competitions are held. Among the features of the Annual Meeting are Shoeing, Milking and other Competitions, Poultry and Horticultural Shows, and Exhibitions illustrative of Bee-keeping, Home Industries, Art-Manufactures, Nature Study and Forestry.

Membership entitles to free admission to the Annual Exhibition, and also to the Grand Stand overlooking the Horse and Cattle Ring, to the Reserved Seats in the Working Dairy, and to the use of the Members' Special Pavilion for Reading, Writing, &c.

Entries can be made by Members (elected on or before the last Tuesday in January preceding the Show) at half the Fees payable by Non-Members.

THE JOURNAL.

All Members receive free of charge the Society's Journal, which is published annually bound in cloth. It has for its aim the dissemination of agricultural knowledge in a popular form, and in addition to original articles by well-known agricultural authorities, it contains particulars of the Society's general operations, full reports of its experimental and research work, prize awards, financial statements, lists of Members, reviews of new books on agriculture, &c. (The price of the *Journal* to non-Members is 6s. 4d. post free.)

CHEMICAL, BOTANICAL AND OTHER FACILITIES.

The Society has a Consulting Chemist and a Consulting Botanist, *from whom Members can obtain analyses and reports at reduced rates of charge.* An arrangement has also been made under which Members of the Society can obtain, free of charge, from the National Fruit and Cider Institute at Long Ashton, analyses of cider-apples and perry-pears.

EXPERIMENTS.

Experiments on crops are conducted at experimental stations in various parts of the Kingdom, and *Members are enabled to take part in these and to receive reports thereon.*

ART-MANUFACTURES, NATURE STUDY, FORESTRY, &c.

One of the objects for which the Society was founded was the encouragement of Arts as well as Agriculture, and, to this end, exhibitions are held of Art-Manufactures and of work representative of Arts and Handicrafts. Exhibitions are also held illustrating Nature Study, as a branch of Education: the Science of Forestry, &c.

TERMS OF MEMBERSHIP.

ANNUAL SUBSCRIPTIONS.

Ordinary Members, not less than	£1
Tenant Farmers, the rateable value of whose holdings does not exceed £200 a-year, not less than	10s.

Governors who are eligible for election as President, or Vice-President, and who subscribe not less than £2, are entitled, in addition to the privileges already mentioned, to an extra Season Ticket for the Annual Exhibition and to the Grand Stand, &c. Governors subscribing more than £2 are entitled to a further Ticket for every additional £1 subscribed.

Members subscribing less than £1 are entitled to all the privileges of Membership except that of entering Stock at reduced fees, and their admission Ticket for the Annual Show is available for *one day only* instead of for the whole time of the Exhibition.

LIFE COMPOSITIONS.

Governors may compound for their Subscription for future years by payment, in advance, of £20; and Members by payment, in advance, of £10. Governors and Members who have subscribed for twenty years may become Life Members on payment of half these amounts.

Any person desirous of joining the Society can be proposed by a Member, or by

THOS. F. PLOWMAN,

Secretary and Editor,

3, Pierrepont Street, Bath.

Telegraphic Address—" PLOWMAN, BATH."

Telephone No. 610.

Bath and West and Southern Counties Society.

GENERAL LAWS.

As revised in accordance with the Report of a Special Committee; which Report was received and adopted by the Annual General Meeting of Members, held on May 30, 1895.

COMPOSITION OF THE SOCIETY.

I. The Society shall consist of a President, Vice-Presidents, Trustees, Council, Treasurer, Secretary, and Members.

OBJECTS.

II. The Society shall have the following objects :—

a. To hold Exhibitions of breeding stock, agricultural implements, and such other articles connected with agriculture, arts, manufactures or commerce, as may be determined upon by the Council.

b. To conduct practical and scientific investigations in agriculture.

c. To promote technical education in agriculture by providing means of systematic instruction.

d. To publish a Journal for circulation.

SUBSCRIPTIONS.

III. The Annual Subscription for Members shall be as follows :—

Governors (who are eligible for election as President or Vice-President), not less than	£2
Ordinary Members, not less than	£1
Tenant Farmers (the rateable value of whose holdings does not exceed £200 a-year), not less than	10*s.*

IV. The payment of £20 in one sum shall constitute a Governor for life, and of £10 in one sum an Ordinary Member for life; but any Governor who has subscribed not less than £2 annually for a period of twenty years may become a Life Governor on the further payment of £10 in one sum; and any Ordinary Member, who has subscribed not less than £1 annually for the same period may become a Life-Member on the further payment of £5 in one sum.

V. Subscriptions shall become due and be payable in advance on the 1st of January in each year or as soon as the Subscriber has been elected a Member. When the election takes place during the last quarter of the year the subscription payable on election will be considered as applying to the ensuing year.

VI. A Member shall be liable to pay his subscription for the current year unless he shall have given notice, in writing, to the Secretary before January 1st of his intention to withdraw.

GOVERNING BODY.

VII. The entire management of the Society—including the making of Bye-laws, election of Members, determining the Prizes to be awarded, appointing Committees, fixing the Places of Meetings and Exhibitions, appointing or removing the Treasurer, Secretary, and such other officers as may be required to carry on the business of the Society—shall be vested in the Council, who shall report its proceedings at the Annual Meetings of the Society.

VIII. The Council shall consist of the Patron (if any), President, Vice-Presidents, Trustees, and Treasurer (who shall be *ex-officio* Members), and of sixty-six elected Members.

ELECTION OF PRESIDENT, VICE-PRESIDENTS, TRUSTEES, AND COUNCIL.

IX. The election of a President for the year, of any additional Vice-Presidents or Trustees, and of the Members of Council representing the Divisions named in Law X., shall take place at the Annual Meeting of the Society, and they shall enter into office at the conclusion of the Exhibition during which such Annual Meeting has been held.

X. The sixty-six Members of the Council referred to in Laws VIII. and IX. shall consist of fifty-eight persons residing or representing property in the following Divisions, viz. :—

Twelve from the Counties of Devon and Cornwall, which shall be called the Western Division ;

Twenty-four from the Counties of Somerset, Dorset, and Wilts, which shall be called the Central Division ;

Twelve from the Counties of Hants, Berks, Oxon, Bucks, Middlesex, Surrey, Sussex, and Kent, which shall be called the Southern Division ; and

Ten from the Counties of Worcester, Gloucester, Hereford and Monmouth, and the Principality of Wales, which shall be called the North-Western Division.

The remaining eight shall be elected (irrespective of locality) from the general body of members, and shall form a Division which shall be called the "Without Reference to District" Division.

XI One-half of the elected Members in each of the five Divisions named in Law X. shall retire annually by rotation, but shall be eligible for re-election.

XII. The Council shall have power to nominate a President, Vice-Presidents, Trustees, and Members of Council for the approval of the Annual Meeting, and to fill up such vacancies in their own body as are left after the Annual Meeting, or as may from time to time occur during the interval between the Annual Meetings.

XIII. Nominations to offices, election to which is vested in the whole body of Members, must reach the Secretary ten days before the meeting at which such vacancies are to be filled up.

MEETINGS.

XIV. The Annual Meeting of the Society shall take place during the holding of the annual Exhibition.

XV. Special General Meetings of the Society may be convened by the President on the written requisition of not less than three Members of Council; and all Members shall have ten days' notice of the object for which they are called together.

XVI. No Member of less than three months' standing, or whose subscription is in arrear, shall be entitled to vote at a Meeting.

EXHIBITIONS.

XVII. The Annual Exhibitions of the Society shall be held in different Cities or Towns in successive years.

XVIII. All Exhibitors shall pay such fees as may be fixed by the Council. Members subscribing not less than £1 per annum, who have been elected previous to February 1st, and have paid the subscription for the current year, shall be entitled to exhibit at such reduction in these fees as the Council shall determine.

PRIZES.

XIX. All prizes offered at the cost of the Society shall be open for competition to the United Kingdom.

XX. No person intending to compete for any prize offered at the annual Exhibition shall be eligible to act as a judge or to have any voice in the selection of judges to award the premiums in the department in which he exhibits.

XXI. If it be proved to the satisfaction of the Council that any person has attempted to gain a prize in this, or in any other society, by a false certificate or by a misrepresentation of any kind, such person shall thereupon be, for the future, excluded from exhibiting in this Society.

JOURNAL.

XXII. The Proceedings of the Society, Awards of Prizes, Financial Statements and Lists of Officers, Governors, and Members, shall be printed annually in the Society's Journal, and every Governor and Member, not in arrear with his subscription, shall be entitled to receive one copy, free of expense, and there shall be an additional number printed for sale.

POLITICS.

XXIII. No subject or question of a political tendency shall be introduced at any Meeting of this Society.

ALTERATIONS IN LAWS.

XXIV. No new General Law shall be made or existing one altered, added to, or rescinded, except at an Annual or Special General Meeting, and then only provided that a statement of particulars, in writing, shall have been sent to the Secretary at least twenty-one days previous to the Meeting at which the question is to be considered.

List of Officers.

1911-1912.

BATH MEETING.

PATRON.

HIS MOST GRACIOUS MAJESTY THE KING.

PRESIDENT FOR 1911-1912.

THE MOST HON. THE MARQUIS OF BATH.

TRUSTEES.

*BATH, THE MARQUIS OF, Longleat, Warminster.
ACLAND, SIR C. T. D., BART., Killerton, Exeter.
EDWARDS, C. L. F., The Court, Axbridge, Somerset.

VICE-PRESIDENTS.

ACLAND, SIR C. T. D., Bart.	Killerton, Exeter
ALLEN, J. D.	Springfield House, Shepton Mallet
BADCOCK, H. J.	Somerset Bank, Taunton
*BATH, MARQUIS OF	Longleat, Warminster
*BEAUFORT, DUKE OF	Badminton, Chippenham
BENYON, J. HERBERT	Englefield House, Reading.
*BUTE, THE MARQUIS OF	The Castle, Cardiff
*CLARENDON, EARL OF	The Grove, Watford
*CLINTON, LORD	Heanton Satchville, Dolton, N. Devon
*COVENTRY, EARL OF	Croome Court, Severn Stoke, Worcester
*DARNLEY, EARL OF	Cobham Hall, Kent
DEVONSHIRE, DUKE OF	Chatsworth, Derbyshire
*DIGBY, LORD	Minterne, Cerne Abbas
*DUCIE, EARL OF	Tortworth, Falfield, R.S.O.
EDWARDS C. L. F.	The Court, Axbridge, Somerset
FITZHARDINGE, LORD	Cranford, Hounslow
HOBHOUSE, RIGHT HON. H.	Hadspen House, Castle Cary
*JERSEY, EARL OF	Middleton Park, Bicester, Oxon
*LANSDOWNE, MARQUIS OF, K.G.	Bowood, Calne
*LLEWELYN, SIR J. T. D., Bart.	Penllergare, Swansea
MORETON, LORD	Sarsden House, Chipping Norton
*MOUNT-EDGCUMBE, EARL OF	Mount Edgcumbe, Devonport
NEVILLE-GRENVILLE, R.	Butleigh Court, Glastonbury
NORTHUMBERLAND, DUKE OF	Albury Park, Guildford

*** Those to whose names an asterisk (*) is prefixed have filled the office of President.

VICE-PRESIDENTS—*continued.*

*PLYMOUTH, EARL OF	Hewell Grange, Bromsgrove
*PORTMAN, VISCOUNT	Bryanston, Blandford
*RADNOR, EARL OF	Longford Castle, Salisbury
SHELLEY, SIR J., Bart. . . .	Shobrooke Park, Crediton
SMITH HON. W. F. D. . . .	Greenlands, Henley-on-Thames
SOMERSET, DUKE OF	Maiden Bradley, Bath
STRACHIE, LORD	Sutton Court, Pensford, Somerset
*TREDEGAR, VISCOUNT . . .	Tredegar Park, Newport, Monmouth
WALERAN, LORD	Bradfield, Cullompton
WILLIAMS, E. W.	Herringston, Dorchester

THE LORD WARDEN OF THE STANNARIES.
THE SURVEYOR-GENERAL OF THE DUCHY OF CORNWALL.
THE RECEIVER-GENERAL OF THE DUCHY OF CORNWALL.

*** Those to whose names an asterisk (*) is prefixed have filled the office of President.

MEMBERS OF COUNCIL.

EX-OFFICIO MEMBERS.

The Patron.
The President.
The Vice-President
The Trustees.
The Treasurer.

ELECTED MEMBERS.

WESTERN DIVISION (Devon and Cornwall

(12 *Representatives.*)

…*ted in* 1910. — *Elected in*

Name.	*Address.*
Buckingham, Rev. F. F.	The Rectory, Doddiscombsleigh, Exeter
Devon, Earl of	Powderham Castle, Devon
Gibbs, A. H.	Pytte, Clyst St. George, Topsham, Devon
Moore-Stevens, Col. R. A.	Winscott, Torrington, Devon
Smyth Osbourne, J. S.	Ash, Iddesleigh, Devon
Studdy, T. E.	Mazonet, Stoke Gabriel, Totnes
Boscawen, Rev. A. T.	Ludgvan Rectory, Long Rock, R.S.O., Cornwall
Daw, J. E.	Exeter
Leverton, W.	Woolleigh Barton, Beaford, N. Devon
Lopes, Sir Henry Y. B., Bart.	Maristow, Roborough, S. Devon
Martyn G.	Liskeard, Cornwall
Sillifant, A. O.	Culm Leigh, Stoke Canon, Exeter

CENTRAL DIVISION (Somerset, Dorset, and Wilts.)

(24 *Representatives.*)

Gibson, J. T.	Claverham, Yatton
Humphries, S.	Eastfield Lodge, Westbury-on-Trym, Bristol
Llewellyn, Col. E. H.	The Court Farm, Langford, Bristol
Maule, M. St. J.	Chapel House, Bath
Miles, Sir H., Bart.	Abbotsleigh, Bristol
Napier, H. B.	Long Ashton, Clifton, Bristol
Parry-Okeden,* Lt.-Col. U. E. P.	Turnworth, Blandford, Dorset
Sanders, R. A., M.P.	Barwick House, Yeovil
Sherston, Major C. D.	Evercreech, Bath
Skrine, Col. H. M.	Warleigh Manor, Bath
Tudway, C. C.	The Cedars, Wells, Somt.
Wynford, Lord	Warmwell, Dorchester
Clark W. H.	Rutland Cottage, Combe Down, Bath
Farwell, E. W.	11, Laura Place, Bath
Gibbons, G.	Tunley Farm, near Bath
Gordon, G. H.	The Barn House, Sherborne, Dorset
Hill, V. T.	Mendip Lodge, Langford, Bristol
Hoare, Sir H. H. A., Bart.	Stourhead, Zeals, S.O., Wilts
Hurle, J. C.	Brislington Hill, Bristol
Phipps, C. N. P.	Chalcot, Westbury, Wilts
Rawlence, E. A.	Newlands, Salisbury
Smith, A. J.	Brooklea, St. Anne's Park, Bristol
Somerville, A. F.	Dinder House, Wells
White, A. R.	Charnage, Mere, Wilts

SOUTHERN DIVISION (Hants, Berks, Oxon, Bucks, Middlesex, Surrey, Sussex and Kent.)

(12 *Representatives.*)

Best, Capt. T. G.	Redrice, Andover, Hants
Byng, Col. Hon. C.	Northerwood Farm, Lyndhurst, Hants
Jervoise, F. H. T.	Herriard Park, Basingstoke
Knollys, C. R.	Ruffield, Winchester, Hants
Latham, T.	Dorchester, Oxon
Rutherford, J. A.	Highclere Estate Office, Newbury
Ashcroft, W.	13, The Waldrons, Croydon
Cobb, H. M.	Higham, Kent
Cundall, H. M., I.S.O., F.S.A.	4, Marchmont Gardens, Richmond, Surrey
Drummond, H. W.	5, Carlos Place, London, W.
Llewellyn L. T. E.	Hackwood, Basingstoke
Sutton, M. J.	Holme Park, Sonning Berks

NORTH-WESTERN DIVISION (Worcestershire, Gloucestershire, Herefordshire, Monmouthshire and Wales.)

(10 *Representatives.*)

Best, Capt. W.	Vivod, Llangollen
Chester Master, Col. T. W.	Knole Park, Almondsbury
Cotterell, Sir J., Bart.	Garnons, Hereford
Lipscomb, G.	Margam Park Estate Office, Port Talbot
Phillips, C. D.	Newport, Mon.
Alexander, D.	Cardiff
Alexander, H. G.	5, High Street, Cardiff
Baker, G. E. Lloyd	Hardwicke Court, Gloucester
Drummond Major F. D. W.	Cawdor Estate Office, Carmarthen
Webb, E.	Wordsley, Stourbridge

WITHOUT REFERENCE TO DISTRICT DIVISION.

(8 *Representatives.*)

Allsebrook, A.	Link Elm, Malvern Link
Mason, F. F.	Swansea
Bathurst, C., M.P.	Lydney Park, Gloucester
Evans H. M. G.	Plassissa, Llangenneth, Carmarthen
Williams Jestyn	Llanover Estate, Newport, Mon.

STANDING COMMITTEES, 1911-1912.

[The PRESIDENT is *ex-officio* Member of all Committees.]

ALLOTMENT.

EDWARDS, C. L. F., *Chairman.*

BATH, MARQUIS OF
BEST, CAPT. W.
BYNG, COL. HON. C.
GIBBONS, G.
NAPIER, H. B.
STUDDY, T. E.
WYNFORD, LORD

CONTRACTS.

NAPIER, H. B., *Chairman.*

BATH, MARQUIS OF
BEST, CAPT. W.
DAW, J. E.
EDWARDS, C. L. F.
MASON F. F.
MILES, SIR H. BART.
NEVILLE-GRENVILLE, R
SMITH, A. J.
STUDDY, T. E.

DAIRY.

ACLAND, SIR C. T. D., Bart., *Chairman.*

ALLEN, J. D.
ASHCROFT, W.
BOSCAWEN, REV. A. T.
CARR RICHARDSON
GIBBONS, G.
GIBSON, J. T.
HURLE, J. COOKE
KNOLLYS, C. R.
LATHAM, T.
LLEWELLYN, COL. E. H.
NAPIER, H. B.
NEVILLE-GRENVILLE, R
SOMERVILLE, A. F.
STRACHIE LORD
TUDWAY, C. C.
WHITE, A. R.

DISQUALIFYING.

THE STEWARDS OF LIVE STOCK AND PRODUCE.

EXPERIMENTS AND EDUCATION.

ACLAND, SIR C. T. D., Bart., *Chairman.*

ALLEN, J. D.
ASHCROFT, W.
BAKER, G. E. LLOYD
BENYON, J. H.
GIBBONS, G.
GIBSON, J. T.
HOBHOUSE, RT. Hon. H.
HUMPHRIES S.
HURLE, J. COOKE
KNOLLYS, C. R.
LATHAM, T.
NEVILLE-GRENVILLE, R.
PHIPPS, C. N. P.
RAWLENCE, E. A.
RUTHERFORD, J. A.
SMYTH-OSBOURNE, J. S.
SOMERVILLE, A. F.
SUTTON, M. J.

(With power to add to their number.)

FINANCE.

NAPIER, H. B., *Chairman.*

GIBBS, A. H.
LLEWELLYN, Col. E. H.
PHIPPS C. N. P.

FORESTRY.

Chairman.

ACLAND, SIR C. T. D., Bart.
CLINTON, LORD
DRUMMOND, MAJOR F. D. W.
LIPSCOMB, G.
NAPIER, H. B.
NORTH, G. F.
RUTHERFORD, J. A.

IMPLEMENT REGULATIONS.

SHELLEY, SIR J., Bart., *Chairman.*

ACLAND, SIR C. T. D., Bart.
BATH, MARQUIS OF
BEST, CAPT. W.
EDWARDS, C. L. F.
GIBBONS, G.
MOORE-STEVENS, COL. R. A.
NAPIER, H. B.
NEVILLE-GRENVILLE, R.
STUDDY, T. E.

JOURNAL.

ACLAND, Sir C. T. D., Bart., *Chairman.*

BAKER, G. E. LLOYD
HOBHOUSE, RIGHT Hon. H.

JUDGES' SELECTION.

SILLIFANT, A. O., *Chairman.*

ALEXANDER, D.
ALLEN, J. D.
ASHCROFT, W.
BYNG, COL. HON. C.
GIBBONS, G.
LATHAM, T.
MASTER, COL. T. W. C.
MOORE-STEVENS, COL. R. A.
PARRY-OKEDEN, LIEUT.-COL. U. E. P.
PHIPPS, C. N. P.
SHELLEY, SIR J., Bart.
WYNFORD, LORD

RAILWAY ARRANGEMENTS AND ADVERTISEMENTS.

, *Chairman.*

ALEXANDER, D.
COVENTRY, EARL OF
DRUMMOND, H. W.
LLEWELLYN, COL. E. H.
MASON, F. F.
PHILLIPS, C. D.
SHELLEY, SIR J., Bart
WEBB, E.

(With power to add to their number.)

SCIENCE AND ART.

BATH, MARQUIS OF, *Chairman.*

ACLAND, SIR C. T. D., Bart.
CUNDALL, H. M., I.S.O., (F.S.A.)
DAW, J. E.
FARWELL, E. W.
HOBHOUSE, RT. HON. H.
LEGARD, A. G.
LIPSCOMB, G.
LLEWELYN, SIR J. T. D., Bart.
NAPIER, H. B.
RUTHERFORD, J. A.

(With power to add to their number.)

SELECTION.

THE CHAIRMEN OF ALL OTHER COMMITTEES.

SHOW PLACE AND DATE.

CHAIRMEN OF THE ALLOTMENT, CONTRACTS, DAIRY, FINANCE, IMPLEMENT REGULATIONS, RAILWAY ARRANGEMENTS, SCIENCE AND ART, AND STOCK PRIZE SHEET COMMITTEES.

(With power to add two Local Members to their number.)

STOCK PRIZE SHEET.

SILLIFANT, A. O., *Chairman.*

ALEXANDER, D.
ALEXANDER, H. G.
ALLEN, J. D.
ALLSEBROOK, A.
ASHCROFT, W.
BUCKINGHAM, REV. F. F.
BYNG, COL. HON. C.
CLARK W. H.
COTTERELL, SIR J., Bart.
GIBBONS, G.
LATHAM, T.
LEVERTON, W.
MILES, SIR H., BART.
MOORE STEVENS, Col. R. A.
SHELLEY, SIR J., Bart.
WYNFORD, LORD

WORKS.

EDWARDS, C. L. F., *Chairman.*

BATH, MARQUIS OF
BEST, CAPT. W.
NAPIER, H. B.
STUDDY, T. E.

Stewards.

Cattle, Sheep and Pigs.

BYNG, COL. HON. C.
ASHCROFT, W.
MOORE-STEVENS, COL. R. A.

Cider.

FARWELL, E. W.

Dairy.

GIBBONS, G. KNOLLYS, C. R.

Dairy Tests.

SOMERVILLE, A. F.

Experiments.

ASHCROFT, W.

Finance.

NAPIER, H. B.
GIBBS, A. H.
LLEWELLYN, COL. E. H.
PHIPPS, C. N. P.

Forestry.

LIPSCOMB, G.

Horses.

ALEXANDER, D.
WYNFORD, LORD

Horticulture.

BOSCAWEN, REV. A. T.

Music.

CUNDALL, H. M. (I.S.O., F.S.A.)

Poultry.

STUDDY, T. E.

Science and Art.

CUNDALL, H. M. (I.S.O., F.S.A.)

Shoeing.

LATHAM, T.

Yard.

EDWARDS, C. L. F.
BEST, CAPT. W.
BATH, MARQUIS OF
STUDDY, T. E.

Other Honorary Officials.

Treasurer—LUTTRELL, C. M. F.

Chaplain.

BOSCAWEN, REV. A. T.

Permanent Officials.

Secretary and Editor—PLOWMAN, THOMAS F.

Associate Editor.

LLOYD, F. J. (F.C.S.)

Auditor.

GOODMAN, F. C. (*Chartered Accountant*)

Consulting Botanist.

PRIESTLEY, J. H. (B.Sc., F.L.S.)

Consulting Chemist.

VOELCKER, Dr. J. A. (M.A., F.I.C.)

Veterinary Inspector.

PENBERTHY, Prof. J. (F.R.C.V.S.)

Superintendent of Works:

AYRE, H. C.

Annual Exhibitions.

Year.	Place Visited.	Local Subscription.	Prizes. Local Committee.	Prizes. Local Societies	Prizes. Local Residents.	Total Local Contribution.	President.	Admissions. On 2/6 Days.	Admissions. On 1/- Days.	Admissions. Total.
		£	£	£	£	£				
1854	Bath	450	..	..	..	450	William Miles, M.P.	..	..	..
1855	Tiverton	450	..	..	..	450	Earl Fortescue	..	..	..
1856	Yeovil	450	..	..	..	450	C. A. Moody, M.P.	..	..	..
1857	Newton Abbot	700	..	..	..	700	Lord Courtenay	..	..	..
1858	Cardiff	800	..	..	..	800	Lord Courtenay	..	..	..
1859	Barnstaple	800	85	..	81	966	John Sillifant	..	..	..
1860	Dorchester	900	..	..	..	900	Lord Rivers	10,709	11,949	22,658
1861	Truro	900	..	..	..	900	J. W. Buller, M.P.	15,201	14,220	29,421
1862	Wells	900	..	..	..	900	Sir T. D. Acland, Bart.	10,578	4,775	15,353
1863	Exeter	900	..	..	..	900	Marquis of Bath	15,635	19,284	34,919
1864	Bristol	1000	106	..	50	1156	Earl Fortescue	22,377	65,678	88,055
1865	Hereford	900	358	..	..	1258	Lord Taunton	16,575	35,261	51,836
1866	Salisbury	900 }	57	..	..	957	{ Earl of Portsmouth	7,288	18,737	26,025
1867	Salisbury	.. }					{ J. Tremayne	7,502	16,702	24,204
1868	Falmouth	900	..	..	..	900	Sir J. T. B. Duckworth, Bart.	11,393	19,495	30,888
1869	Southampton	900	132	..	18	1050	Earl of Carnarvon	15,340	41,290	56,630
1870	Taunton	900	..	..	..	900	Sir S. H. Northcote, Bart., C.B., M.P.	17,952	33,653	51,605
1871	Guildford	900	110	..	..	1010	Earl of Cork	10,656	23,406	34,062
1872	Dorchester	800	..	..	10	810	Duke of Marlborough, K.G.	12,791	21,517	34,308
1873	Plymouth	800	..	400	..	1200	Earl of Mount-Edgcumbe.	16,665	45,744	62,409
1874	Bristol	800	403	..	..	1203	Sir Massey Lopes, Bart., M.P.	37,329	72,791	110,120
1875	Croydon	800	245	..	..	1045	R. Benyon, M.P.	14,518	26,028	40,546
1876	Hereford	800	381	..	..	1181	Earl of Ducie	16,396	32,645	49,041
1877	Bath	800	215	..	..	1015	Marquis of Lansdowne	27,625	48,852	76,477
1878	Oxford	800	..	170	6	976	Earl of Jersey	12,414	26,995	39,409
1879	Exeter	800	..	..	10	810	Earl of Morley	14,634	40,533	55,167
1880	Worcester	800	..	254	..	1054	Earl of Coventry	8,415	37,675	46,090
1881	Tunbridge Wells	800	245	34	..	1079	Marquis of Abergavenny	13,368	33,236	46,604
1882	Cardiff	800	200	198	17	1215	Lord Tredegar	23,941	38,680	62,621
1883	Bridgwater	800	78	..	..	878	Lord Brooke, M.P.	17,171	31,241	48,412

ANNUAL EXHIBITIONS—*continued.*

Year.	Place Visited.	Local Subscription.	Prizes. Local Committee.	Prizes. Local Societies	Prizes. Local Residents.	Total Local Contribution.	President.	Admissions. On 5/- Day.	Admissions. On 2/6 Days.	Admissions. On 1/- Days.	Admissions. Total.
		£	£.	£	£	£					
1884	Maidstone .	800	310	33	75	1218	Viscount Holmesdale . .	..	13,501	31,053	44,554
1885	Brighton .	800	227	33	82	1142	Viscount Hampden . .	..	9,637	39,851	49,488
1886	Bristol . .	800	525	..	..	1325	Lord Carlingford . .	..	29,580	70,999	100,579
1887	Dorchester .	800	..	112	..	912	Earl of Ilchester . . .	..	8,860	29,846	38,706
1888	Newport (Mon.)	800	100	..	..	900	Lord Tredegar . . .	..	14,878	38,567	53,445
1889	Exeter . .	800	..	..	10	810	Lord Clinton	..	16,405	36,195	52,600
1890	Rochester .	800	294	..	26	1120	Earl of Darnley . . .	..	3,480	48,314	51,794
1891	Bath . .	800	50	103	100	1053	Earl Temple	..	23,510	52,185	75,695
1892	Swansea . .	800	200	100	10	1110	Sir J. D. T. Llewelyn, Bart. .	..	18,364	54,609	72,973
1893	Gloucester .	800	400	..	..	1200	Lord Fitzhardinge . . .	..	14,272	40,368	54,640
1894	Guildford .	800	174	..	10	984	Earl of Onslow . . .	..	8,671	29,813	38,484
1895	Taunton . .	800	85	160	10	1055	Viscount Portman . . .	..	13,181	30,111	43,292
1896	St. Albans .	800	152	..	..	952	Earl of Clarendon . . .	..	12,056	22,380	34,436
1897	Southampton .	800	50	..	..	850	Lord Montagu of Beaulieu .	..	8,284	33,750	42,034
1898	Cardiff . .	800	200	..	..	1000	Lord Windsor . . .	..	13,101	42,501	55,602
1899	Exeter . .	800	..	225	5	1030	Lord Clinton	..	16,091	39,832	55,923
1900	Bath . .	800	100	150	10	1060	Marquis of Bath . . .	954	11,601	36,814	49,369
1901	Croydon . .	80	115	..	..	915	H.R.H. The Duke of Cornwall and York, K.G. . .	1,196	9,362	30,693	41,251
1902	Plymouth .	800	105	100	36	1041	Earl of Morley . . .	842	12,629	40,565	54,036
1903	Bristol . .	800	434	50	61	1345	Duke of Beaufort . . .	..	34,528	74,352	108,880
1904	Swansea . .	800	350	..	..	1150	Lord Windsor . . .	..	28,265	50,562	78,827
1905	Nottingham .	800	..	218	..	1018	Duke of Portland, K.G. . .	..	8,913	45,964	54,877
1906	Swindon .	800	..	200	50	1050	Earl of Radnor	..	7,838	42,013	49,851
1907	Newport (Mon.)	800	201	51	29	1081	H.R.H. The Prince of Wales, K.G.	..	16,236	37,819	54,055
1908	Dorchester .	800	100	25		925	Lord Digby . . .	..	12,227	20,350	32,577
1909	Exeter . .	800	..	100	..	900	Lord Clinton	..	14,898	41,891	56,789
1910	Rochester and Chatham .	800	117			917	Earl of Darnley . . .	..	5,892	20,105	25,997
1911	Cardiff . .	800	195	110	10	1115	Marquis of Bute . . .	..	16,213	40,588	56,801
1912	Bath . .	800	100	100	..	1000	Marquis of Bath . . .	..			

Members' Privileges.

ANALYSES OF FERTILISERS, FEEDING STUFFS, WATERS, SOILS, &c.

(Applicable only to the case of Persons who are not commercially engaged in the manufacture or sale of any substance sent for Analysis).

Members of the Bath and West and Southern Counties Society, who may also be Members of other Agricultural Societies, are particularly requested, in applying for Analyses, to state that they do so as Members of the first-named Society.

THE following are the rates of Charges for Chemical Analyses to Members of the Society.

These privileges are applicable only when the analyses are for *bona fide* agricultural purposes, and are required by Members of the Society for their own use and guidance in respect of farms or land in their own occupation and within the United Kingdom

The analyses are given on the understanding that they are required for the individual and sole benefit of the Member applying for them, and must not be used for other persons, or for commercial purposes

Land or estate agents, bailiffs, and others, when forwarding samples are required to state the names of those Members on whose behalf they apply.

Members are also allowed to send for analysis under these privileges any manures or feeding-stuffs to be used by their outgoing tenants, or which are to be given free of cost to their occupying tenants.

The analyses and reports may not be communicated to either vendor or manufacturer, except in cases of dispute

Members are requested, when applying for an analysis, to quote the number in the subjoined schedule under which they wish it to be made.

No.		
1.	An opinion of the purity of bone-dust or oil cake (each sample) ..	*2s. 6d.*
2.	An analysis of sulphate or muriate of ammonia, or of nitrate of soda, together with an opinion as to whether it be worth the price charged	*5s.*
3.	An analysis of guano showing the proportion of moisture, organic matter, sand, phosphate of lime, alkaline salts and ammonia, together with an opinion as to whether it be worth the price charged	*10s.*
4.	An analysis of mineral superphosphate of lime for soluble phosphates only, together with an opinion as to whether it be worth the price charged . ..	*5s.*
5.	An analysis of superphosphate of lime, dissolved bones, &c., showing the proportions of moisture, organic matter, sand, soluble and insoluble phoshates, sulphate of lime, and ammonia, together with an opinion as to whether it be worth the price charged	*10s.*
6.	An analysis of bone-dust, basic slag, or any other ordinary artificial manure, together with an opinion as to whether it be worth the price charged .. .	*10s.*
7.	An analysis of compound artificial manures, animal products, refuse substances used for manure, &c.	from *10s.* to £1
8.	An analysis of limestone, showing the proportion of lime	*7s. 6d.*
9.	An analysis of limestone, showing the proportion of lime and magnesia .	*10s.*
10.	An analysis of limestone or marls, showing the proportion of carbonate, phosphate, and sulphate of lime and magnesia, with sand and clay	*10s.*
11.	Partial analysis of a soil, including determinations of clay, sand, organic matter, and carbonate of lime	£1
12.	Complete analysis of a soil	£3
13.	An analysis of oil-cake or other substance used for feeding purposes, showing the proportion of moisture, oil, mineral matter, albuminous matter, and woody fibre as well as of starch, gum, and sugar in the aggregate , and an opinion of its feeding and fattening or milk-producing properties	*10s.*
14.	Analysis of any vegetable product	*10s.*
15.	Determination of the "hardness" of a sample of water before and after boiling	*5s.*
16.	Analysis of water of land-drainage, and of water used for irrigation	£1
17.	Analysis of water used for domestic purposes	£1 *10s.*
18.	An analysis of milk (to assist Members in the management of their Dairies and Herds, *bona-fide* for their own information and not for trade purposes, nor for use in connection with the Sale of Food and Drugs Acts)	*5s.*
19.	Personal consultation with the Consulting Chemist. (To prevent disappointment it is suggested that Members desiring to hold a consultation with the Consulting Chemist should write to make an appointment)	*5s.*
20.	Consultation by letter	*5s.*
21.	Consultation necessitating the writing of three or more letters	*10s.*

Members wishing to exercise their privileges on the above-named terms, should forward their samples for examination *by post or parcel prepaid*, to the Consulting Chemist, DR. JOHN AUGUSTUS VOELCKER, M.A., F.I.C., 22, Tudor Street, New Bridge Street, London, E.C.

The fees for analysis must be sent to the Consulting Chemist at the time of application.

GUIDE TO PURCHASERS OF FERTILISERS AND FEEDING STUFFS.

Purchasers are recommended in every case to insist upon having an *Invoice* given to them. This invoice should set out clearly :—

In the case of **Fertilisers**—
(1.) the **name** of the fertiliser ;
(2.) whether the fertiliser be artificially **compounded** or not ;
(3.) the **analysis** guaranteed in respect of the principal fertilising ingredients.

In the case of **Feeding-Stuffs**—
(1.) the **name** of the article :
(2.) the **description** of the article ; whether it has been made from one substance or seed only, or from more than one.
(3.) the **analysis** guaranteed in respect of Oil and Albuminoids.

(NOTE.—The use of the terms " Linseed-cake," " Cotton-cake," &c., implies that these cakes shall be " pure," and purchasers are recommended to insist upon these terms being used without any qualification such as " 95 per cent.," " as imported," &c. " Oil-cake " should be avoided.

Members of the Society should see that the **Invoices** agree accurately with the orders given by them, and, in giving these orders, they should stipulate that the goods come up to the guarantees set out in the following list, and that they be sold **subject to the analysis and report of the Consulting Chemist of the Bath and West and Southern Counties Society.**

FERTILISERS.

Raw Bones, Bone-meal, or **Bone-dust** to be guaranteed " PURE," and to contain not less than 45 per cent. of Phosphate of Lime, and not less than 4 per cent. of Ammonia.

Steamed or " Degelatinised " Bones to be guaranteed " PURE," and to contain not less than 55 per cent. of Phosphate of Lime, and not less than 1 per cent. of Ammonia.

Mineral Superphosphate of Lime to be guaranteed to contain a certain percentage of " Soluble Phosphate." [From 25 to 28 per cent. of Soluble Phosphate is an ordinarily good quality.]

Dissolved Bones to be guaranteed to be " made from raw bone and acid only," and to be sold as containing stated percentages of Soluble Phosphate, Insoluble Phosphates, and Ammonia.

Compound Artificial Manures, Bone Manures, Bone Compounds, &c., to be sold by analysis stating the percentages of Soluble Phosphate, Insoluble Phosphates, and Ammonia contained.

Basic Slag to be guaranteed to contain a certain percentage of Phosphoric Acid, and to be sufficiently finely ground that 80 to 90 per cent. passes through a sieve having 10,000 meshes to the square inch.

Peruvian Guano to be described by that name, and to be sold by analysis stating the percentages of Phosphates and Ammonia.

Sulphate of Ammonia to be guaranteed to be " PURE," and to contain not less than 24 per cent of Ammonia.

Nitrate of Soda to be guaranteed to be " PURE," and to contain 95 per cent. of Nitrate of Soda.

Kainit to be guaranteed to contain 23 per cent of Sulphate of Potash.

All fertilisers to be delivered in good and suitable condition for sowing.

FEEDING-STUFFS.

Linseed Cake, Cotton Cake (Decorticated and Undecorticated), and **Rape Cake** (for feeding purposes) to be pure, i.e., prepared *only* from one kind of seed from which their name is derived, and to be in sound condition. The report of the Consulting Chemist of the Bath and West and Southern Counties Society to be conclusive as to the "purity" or otherwise of any feeding-stuffs. The percentages of Oil and Albuminoids must also be guaranteed.

Mixed Feeding Cakes, Meals, &c., to be sold on a guaranteed analysis.

All Feeding-Stuffs to be sold in sound condition, and to contain nothing of an injurious nature or worthless for feeding purposes.

INSTRUCTIONS FOR SELECTING AND SENDING SAMPLES FOR ANALYSIS.

GENERAL RULES.

1.—A sample taken for analysis should be fairly *representative of the bulk* from which it has been drawn.

2.—The sample should reach the Analyst *in the same condition* as it was at the time when drawn.

FERTILISERS.

When **Fertilisers** are delivered in bags, select four or five of these from the bulk, and either turn them out on a floor and rapidly mix their contents, or else drive a shovel into each bag and draw out from as near the centre as possible a couple of shovelfuls of the manure, and mix these quickly on a floor.

Halve the heap obtained in either of these ways, take one-half (rejecting the other) and mix again rapidly, flattening down with the shovel any lumps that appear. Repeat this operation until at last only some three or four pounds are left.

From this fill three tins, holding from ½ lb. to 1 lb. each, mark, fasten up and seal each of these. Send one for analysis, and retain the others for reference.

Or,—the manure may be put into glass bottles provided with well-fitting corks; the bottles should be labelled and the corks sealed down. The sample sent for analysis can be packed in a wooden box and sent by post or rail.

When manures are delivered in bulk, portions should be successively drawn from *different parts* of the bulk, the heap being turned over now and again. The portions drawn should be thoroughly mixed, sub-divided, and, finally, samples should be taken as before, except that when the manure is coarse and bulky it is advisable to send larger samples than when it is in a finely-divided condition.

FEEDING-STUFFS.

Linseed, Cotton, and other Feeding Cakes.—If a single cake be taken three strips should be broken off right across the cake and from the middle portion of it, one piece to be sent for analysis, and the other two retained for reference. Each of the three pieces should be marked, wrapped in paper, fastened up and sealed. The piece forwarded for analysis can be sent by post or rail.

A more satisfactory plan is to select four to six cakes from different parts of the delivery, then break off a piece about four inches wide from the middle of each cake, and pass these pieces through a cake-breaker. The broken cake should then be well mixed, and three samples of about 1 lb. each should be taken and put in tins or bags duly marked, fastened, and sealed as before. One of these lots

should be sent for anaylsis, the remaining two being kept for reference. It is advisable, also, with the broken pieces, to send a small strip from an unbroken cake.

Feeding Meals, Grain, &c.—Handfuls should be drawn from the centre of half-a-dozen different bags of the delivery; these lots should then be well mixed, and three ½ lb. tins or bags filled from the heap, each being marked, fastened up, and sealed. One sample is to be forwarded for analysis and the others retained for reference.

SOILS, WATERS, &c.

Soils.—Have a wooden box made, 6 inches in length and width, and from 9 to 12 inches deep, according to the depth of soil and subsoil of the field. Mark out in the field a space of about 12 inches square; dig round in a slanting direction a trench, so as to leave undisturbed a block of soil and its subsoil 9 to 12 inches deep; trim this block to make it fit into the wooden box, invert the open box over it, press down firmly, then pass a spade under the box and lift it up gently, turn over the box, nail on the lid, and send by rail. The soil will then be received in the position in which it is found in the field.

In the case of very light, sandy, and porous soils, the wooden box may be at once inverted over the soil and forced down by pressure, and then dug out.

Waters.—Samples of water are best sent in glass-stoppered Winchester bottles holding half a gallon. One such bottle is sufficient for a single sample. Care should be taken to have these scrupulously clean. In taking a sample of water for analysis it is advisable to reject the first portion drawn or pumped, so as to obtain a sample of the water when in ordinary flow. The bottle should be rinsed out with the water that is to be analysed, and it should be filled nearly to the top. The stopper should be secured with string, or be tied over with linen or soft leather. The sample can then be sent carefully packed either in a wooden box with sawdust, &c., or in a hamper with straw.

Milk.—A pint bottle should be sent in a wooden box.

GENERAL INSTRUCTIONS.

Time for Taking Samples.—All samples, both of fertilisers and feeding-stuffs, should be taken as soon after their delivery as possible, and should reach the Analyst within *ten days* after delivery of the article. In every case it is advisable that the Analyst's certificate be received before a fertiliser is sown or a feeding-stuff is given to stock.

Procedure in the event of the Vendor wishing Fresh Samples to be Drawn.—Should a purchaser find that the Analyst's certificate shows a fertiliser or feeding-stuff not to come up to the guarantee given him, he may inform the vendor of the result and complain accordingly. He should then send to the vendor *one* of the two samples which he has kept for reference. If, however, the vendor should demand that a fresh sample be drawn, the purchaser must allow this, and also give the vendor an opportunity of being present, either in person or through a representative whom he may appoint. In that case, three samples should be taken in the presence of both parties with the same precautions as before described, *each* of which should be duly packed up, labelled and *sealed* by both parties. One of these is to be given to the vendor, one is to be sent to the Analyst, and the third is to be kept by the purchaser for reference or future analysis if necessary.

All samples intended for the Consulting Chemist of the Society should be addressed (postage or carriage prepaid) to Dr. J. AUGUSTUS VOELCKER, M.A., F.I.C., 22, Tudor Street, New Bridge Street, London, E.C. Separate letters of instruction should be sent at the same time.

Members' Privileges.

EXAMINATION OF PLANTS AND SEEDS.

THE Council have arranged for the following rates of charge for the examination by the Society's Consulting Botanist of Plants and Seeds for the *bona-fide* and individual information and benefit of Members of the Society (not being seedsmen). The charge for examination must be paid at the time of application and the carriage of all parcels must be prepaid. Members of the Society desirous of personally interviewing the Consulting Botanist can make an appointment with him at the University of Bristol (University Road, just above the top of Park Street) by letter. To prevent disappointment, all applications for an interview should reach the Consulting Botanist two days before the interview is desired. No appointments can be made for the month of August, but samples or specimens sent during that month will be dealt with as usual.

No.		
1.	—A report on the purity and germinating power of a sample of seed, stating the sorts and amount of any other seeds found therein	1s.
2.	—Determination of the species of any weed or other plant, or of any epiphyte or vegetable parasite, with a report on its habits, and the means for its extermination or prevention	1s.
3.	—Report on any disease affecting farm crops	1s.
4.	—Determination of the species of a collection of natural grasses found in any district with a report on their habits and pasture value	5s.

N.B.—The Consulting Botanist's Reports on Seeds are furnished to enable Members—purchasers of seeds and corn for Agricultural or Horticultural purposes—to test the value of what they buy, and not to be used or made available for advertising or trade purposes.

PURCHASE OF SEEDS.

The purchaser should obtain from the vendor, by invoice or otherwise, a proper designation of the seed he buys, with a guarantee that it contains not more than a specified amount of other seeds and is free from ergot, or in the case of clovers, from dodder, and of the percentage of seeds that will germinate.

The germination of cereals, green crops, clover, and timothy grass should be not less than 90 per cent.; of fox-tail not less than 60 per cent.; of other grasses not less than 70 per cent.

The Council strongly recommend that the purchase of prepared mixtures should be avoided, and that the different seeds to be sown should be purchased separately.

INSTRUCTIONS FOR SELECTING AND SENDING SAMPLES.

I. SEEDS.

In sending seed or corn for examination the utmost care must be taken to secure a fair and honest sample. In the case of grass-seeds the sample should be drawn from the centre of the sack or bag, and in all cases from the bulk delivered to the purchaser and not from the purchase sample. When bought by sample, the whole or part of that sample should also be sent.

When it is considered necessary to secure legal evidence the sample should be taken from the bulk and placed in a sealed bag in the presence of a reliable witness who is acquainted with the identity of the bulk, and care should be taken that the purchased sample and bulk be not tampered with after delivery, or mixed or come in contact with any other sample or stock.

One ounce of grass and other small seeds should be sent, and two ounces of cereals or larger seeds. The exact name under which the seed has been bought should be sent with it.

Grass-seeds should be sent at least FOUR WEEKS, *and clover-seeds* TWO WEEKS *before they are required and they should not be sown until the report has been received.*

II. PLANTS.

In collecting specimens of plants, the whole plant should be taken up and the earth shaken from the roots. If possible, the plants must be in flower or fruit. They should be packed in a light box or in a firm paper parcel.

Specimens of diseased plants or of parasites should be forwarded as fresh as possible. They should be placed in a bottle, or packed in tinfoil or oil-silk.

All specimens should be accompanied with a letter specifying the nature of the information required and stating any local circumstances (soil, situation, &c.), which, in the opinion of the sender, would be likely to throw light on the inquiry.

To avoid delay parcels or letters containing seeds or plants for examination (carriage or postage prepaid) must be addressed to Mr. J. H. PRIESTLEY, B.Sc., F.L.S., The University, Bristol, and be marked "Bath and West Society."

BATH MEETING,

MAY 22, 23, 24, 25 and 27, 1912.

LIST OF JUDGES.

HORSES.

Agricultural.—J. T. C. EADIE, The Rock, Newton Solney, Burton-on-Trent.
Hunters.—R. C. FORSTER, Vasterne Manor, Wootton Bassett.
Hackneys.—C. E. E. COOKE, Bygrave, near Baldock, Herts.
Ponies.—C. M. PRIOR, Adstock Manor, Winslow, Bucks.
Pit Ponies.—D. REES, Bryn Bedw, Tylorstown, Glam.
Harness.—C. E. E. COOKE, Bygrave, near Baldock, Herts.
Jumping.—R. C. FORSTER, Vasterne Manor, Wootton Bassett.

CATTLE.

Devon.—E. C. NORRISH, Hillsleigh, Instow, North Devon.
South Devon.—J. COAKER, Blagdon Barton, Paignton.
Shorthorn and Dairy—GEO. TAYLOR, Cranford, Middlesex.
Hereford.—JAMES EDWARDS, Broadward, Leominster.
Sussex.—D. SWAFFER, Mumford, Kingsnorth, Ashford, Kent.
Aberdeen Angus.—H. BLAND, Blandsfort, Abbeyleix, Ireland.
Jersey.—E. MATHEWS, Little Shardeloes, Amersham, Bucks.
Guernsey.—W. TRERISE RICHARDS, Godolphin House, Breage, Cornwall.
Kerry and Dexter.—COL. W. STALLARD, St. John's House, Worcester.

SHEEP.

Cotswold.—DAVIS BROWN, Marham Hall, Downham Market, Norfolk.
Devon Longwoolled.—J. H. GIBBINGS, Week Barton, North Tawton, Devon.
South Devon.—J. W. HALLETT, Matford, Alphington, Exeter.
Kent or Romney Marsh.—H. RIGDEN, Etchinghill, Lyminge, Kent.
Southdown.—H. SENIOR, Heatherlands, Colehill, Wimborne, Dorset.
Hampshire Down.—E. J. BENNETT, Chilmark, Salisbury.
Shropshire.—T. S. MINTON, Montford, Shrewsbury.
Oxford Down.—H. OVERMAN, Kipton House, Weasenham, Swaffham, Norfolk.
Dorset Down.—A. O. SYMES, Kingston Russell, near Dorchester, Dorset.
Dorset Horn.—R. H. COOPER, Wyke, Sherborne, Dorset.
Exmoor Horn.—W. HARDING, Millbrook, North Molton, Devon.

PIGS.

Berkshire.—A. S. GIBSON, Coldham House, Elm, Wisbech.
Large Black.—R. B. BOND, The Red House, Sproughton, Ipswich.
Large and Middle White and Tamworth.—COL. F. A. WALKER JONES, Manor House, Burton, Westmoreland.
Any Breed.—J. M. HARRIS, Chilvester Lodge, Calne.

POULTRY.

T. C. HEATH, Keele, Newcastle, Staffordshire ; and
W. SMITH LAMBERT, Harlow Court Farm, Harrogate.

PRODUCE.

Cider.—J. ETTLE, F.R.H.S., 37, Stanley Grove, Weston-super-Mare.
Cheese.—G. F. BUTCHER, Hillside, Greenway Lane, Bath.
Cream Cheese, Butter and Cream.—PROF. T. CARROLL, 1, Rostrevor Terrace, Rathgar, Dublin.

COMPETITIONS.

Butter-Making.—PROF. T. CARROLL, 1, Rostrevor Terrace, Rathgar, Dublin ; and MILES BENSON, British Dairy Institute, Reading.
Milking.—H. HILL, Manor Farm, Paulton, Bristol.
Shoeing.—GEORGE P. MALE, M.R.C.V.S., Friar Street, Reading.

VETERINARY INSPECTOR:

PROF. J. PENBERTHY, F.R.C.V.S., Dean Hall, Newnham, Glos.

LOCAL VETERINARY SURGEON:

W. A. WELCH, M.R.C.V.S., Walcot Street, Bath.

MONEY PRIZES.

	£	s.	d.		PAGE
HORSES	922	0	0	..	cxii
CATTLE	1,182	10	0	..	cxviii
DAIRY HERDS	60	0	0	..	cxxii
SHEEP ..	591	0	0	..	cxxiii
PIGS ..	221	0	0	..	cxxv
CHEESE	104	0	0	..	cxxvii
CREAM CHEESE, BUTTER AND CREAM	79	10	0	..	cxxviii
BUTTER-MAKING	58	0	0	..	cxxix
MILKING	11	5	0	..	cxxx
SHOEING	38	10	0	..	cxxx
POULTRY	163	10	0	..	cxl
	£3,431	5	0		

DONORS OF MONEY PRIZES.

	£	s.	d.
Bath and West and Southern Counties Society ..	2,778	15	0
Bath Local Committee	100	0	0
Somerset County Agricultural Association ..	100	0	0
Somerset Agricultural Instruction Committee ..	44	0	0
Coal Owners of Somerset (per E. M. Hepple, Esq.)	6	0	0
Residents in Somerset, Wiltshire and Gloucestershire	60	0	0
Shire Horse Society (or Medal)	15	0	0
Hackney Horse Society (or Medal)	5	0	0
Lord Tredegar	12	0	0
Devon Cattle Breeders' Society	10	0	0
South Devon Herd Book Society	17	0	0
Shorthorn Society	20	0	0
Dairy Shorthorn (Coates's Herd Book) Association	10	0	0
Hereford Herd Book Society	20	0	0
English Aberdeen Angus Cattle Association ..	10	0	0
English Jersey Cattle Society (or Medal) ..	29	0	0
Royal Jersey Agricultural Society	10	10	0
English Guernsey Cattle Society	28	0	0
English Kerry and Dexter Cattle Society ..	15	0	0
Cotswold Sheep Breeders' Society	11	0	0
Devon Longwoolled Sheep Breeders' Society ..	10	0	0
Kent or Romney Marsh Sheep Breeders' Association	17	0	0
Southdown Sheep Society	17	0	0
Hampshire Down Sheep Breeders' Association ..	10	0	0
Oxford Down Sheep Breeders' Association ..	10	0	0
Dorset Horn Sheep Breeders' Association ..	15	0	0
Dorset Down Sheep Breeders' Association ..	17	0	0
Exmoor Horn Sheep Breeders' Association ..	17	0	0
British Berkshire Society	5	0	0
Large Black Pig Society	12	0	0
	£3,431	5	0

DONORS OF MEDALS, PLATE, &c.

Shire Horse Society.
Hunters' Improvement Society.
Hackney Horse Society.
Polo and Riding Pony Society.
Sussex Herd Book Society.
Aberdeen Angus Cattle Society.
English Aberdeen Angus Cattle Association.
English Jersey Cattle Society.
B. de Bertodano, Esq.
English Kerry and Dexter Cattle Society.
Southdown Sheep Society.
National Pig Breeders' Association.
Chas. and Thos. Harris & Co. (Ld.)
Somerset Agricultural Instruction Committee.
Poultry Club.
Bath and West Society.

PRIZES

	First Prize.	Second Prize.	Third Prize
An Animal can be entered in as many Classes as it is eligible for on payment of an additional fee in each Class. No additional fee is, however, payable in the case of those Prizes headed as Champion or Special Prizes.	£	£	£
HORSES.			
Exhibitors are requested to note that Animals entered in Classes 1 to 8 must be in the Yard before 8 a.m. on Wednesday, May 22nd, and (except the Stallions in Classes 1 and 2 which can be removed after the Parade of Horses on the third day of the Show) must remain in the Yard till 6 p.m. on Monday, May 27th.			
SHIRE.			
(Registered or eligible for registration in the Shire Horse Society's Stud Book.)			
CLASS			
1.—STALLION, foaled before 1910	15	10	3
2.—STALLION, foaled in 1910	15	10	3
3.—COLT, foaled in 1911	15	10	3
4.—MARE in Foal, or with foal at foot	15	10	3
5.—FILLY or GELDING, foaled in 1911	10	5	3
6.—FILLY or GELDING, foaled in 1910	10	5	3
7.—FILLY or GELDING, foaled in 1909	10	5	3
8.—Novice Class, MARE or GELDING, 4 years old or over not having won a Prize of £5 and upwards up to March 29th, 1912	6	4	2

	First Prize.	Second Prize.	Third Prize
HORSES—*continued.*	£	£	£
SPECIAL PRIZES.			
(Offered by the Shire Horse Society.)			
A Gold Medal, or the sum of £10, for Best MARE or FILLY in the Shire Horse Classes, under Condition 48, and to the Breeder of the Winner under the Conditions stated, a prize of	10 5		
(Offered by the Somerset County Agricultural Association.)			
Best Stallion or Colt Foaled in 1910 or 1911, the property of a resident in the County of Somerset . . .	10		
Best Mare, Filly or Filly Foal, foaled in 1909, 1910, or 1911, the property of a resident in the County of Somerset	10		
HUNTERS.			
Animals entered in Classes 9 to 15 must be in the Yard before 8 a m on Wednesday, May 22nd, and must remain there till 4 p m on Friday, May 24th, when they must be removed from the Yard			
CLASS			
9.—MARE in Foal, or with Foal at Foot	15	10	3
10.—FILLY, COLT or GELDING, foaled in 1911	10	5	3
11.—FILLY or GELDING, foaled in 1910	10	5	3
12.—FILLY or GELDING, foaled in 1909	15	10	3
13.—MARE or GELDING, foaled in 1908 . . .	15	10	3
14.—MARE or GELDING, foaled before 1908	15	10	3
15.—NOVICE Class, MARE or GELDING, 4 years old or over, not having won a Prize of £5 and upwards up to March 29th, 1912	6	4	2
SPECIAL PRIZES			
(Offered by the Somerset County Agricultural Association.)			
Best Heavy or Light Weight Hunter in Classes 9 to 15, foaled since January 1st, 1906, and bred in the County of Somerset (breeder's certificate must accompany the Form of Entry)	20		
(Offered by the Hunters' Improvement Society, under Condition 49.)			
A Gold Medal, or £5 and a Bronze Medal, for the Best Hunter Brood Mare in Class 9 actually registered with a number in the Hunter Stud Book, at the time of the award, not having previously won the Hunters' Improvement Society's Gold Medal as a Brood Mare in 1912, and which must produce a living foal in 1912, or have her foal at foot. In the first instance a certificate to that effect must be forwarded before the Medal is sent.			

	First Prize.	Second Prize.	Third Prize
HORSES—*continued.*	£	£	£
A Silver Medal or £1 (at the option of the winner), for the best Hunter Mare or Gelding of any age, exhibited by a member of the Hunters' Improvement Society at the time of the award.			
Only Prize-winners in the Classes will be eligible for these Medals.			
HACKNEYS.			
(Registered or eligible for registration in the Hackney Horse Society's Stud Book.)			
Animals entered in Classes 16 to 19 must be brought into the Yard after 6 p.m. on Friday, May 24th, and before 8 a m. on Saturday, May 25th, and must remain in the Yard till 6 p.m. on Monday, May 27th.			
CLASS			
16.—MARE in Foal, or with Foal at Foot . . .	15	10	3
17.—FILLY, COLT OR GELDING, foaled in 1911 . .	10	5	3
18.—FILLY or GELDING, foaled in 1910	10	5	3
19.—MARE or GELDING, foaled in 1908 or 1909 . .	10	5	3
SPECIAL PRIZE.			
(Offered by the Hackney Horse Society.)			
A Silver Medal for the Best Mare or Filly exhibited in Classes 16 to 19, under Condition 51.			
PONIES.			
Animals entered in Classes 20 to 25 must be brought into the Yard after 6 p.m. on Friday, May 24th, and before 8 a m. on Saturday, May 25th, and must remain in the Yard until 6 p.m. on Monday, May 27th.			
(Of the Prizes offered in Classes 20 to 23, £12 is contributed by Lord Tredegar.)			
20.—STALLION, not exceeding 15 hands, suitable to get Polo or Riding Ponies	6	4	2
21.—MARE, not exceeding 14.2 hands, suitable to breed Polo or Riding Ponies, in-foal, or with foal at foot	6	4	2
22.—FILLY, COLT or GELDING, foaled in 1910, not exceeding 14.1 hands	6	4	2
23.—FILLY, COLT or GELDING, foaled in 1909, not exceeding 14.1½ hands	6	4	2
(The Prizes in Class 24 are offered by the Bath Local Committee.)			
24.—Mare or Gelding, not exceeding 14.2 hands, the property of a resident within a radius of eight miles of the Guildhall, Bath	8	5	3

	First Prize.	Second Prize.	Third Prize
HORSES—*continued.*	£	£	£
(The First Prize in Class 25 is offered by Coalowners of Somerset, per E. M. Heppel, Esq.)			
CLASS **25.—Mare or Gelding, that has been worked in a Coalpit for not less than six months and up to within ten days of May 22nd**	6	4	2
SPECIAL PRIZES.			
(Offered by the Polo and Riding Pony Society.)			
A Silver Medal for the best Polo Pony Brood Mare, registered or eligible for registration in the Stud Book.			
A Silver Medal for the best Polo Pony Stallion, registered or eligible for registration in the Stud Book; or best Polo Pony Entire Colt, entered or eligible for the Supplement, one, two, or three years old.			
A Bronze Medal for the best Foal, entered or eligible for the Supplement.			
(These Medals are offered subject to Condition No. 53.)			
HARNESS.			
ENTRIES CLOSE { With boxes—March 22, or at double fees March 29. Without Boxes—May 3.			
Horses entered in other Classes can, if eligible, be also entered on payment of an additional fee, in the Harness Classes.			
Horses entered in the Double Harness and Tandem Classes can also be entered on payment of an additional fee, in the single Harness Classes.			
Horses entered in the Harness Classes only and not having a box in the Yard, must be in the Show Yard by 2 p.m. on the day on which they compete, and, with the consent of the Stewards, may leave the Yard as soon as the class has been judged.			
26.—MARE or GELDING, not over 14.2 hands, to be driven in harness on the 1st day of the Show .	10	5	2
(The Prizes in Class 27 are offered by the Bath Local Committee.)			
27.—Tandems (Mares or Geldings), to be driven in harness on the 1st day of Show	**10**	**5**	**2**
28.—MARE or GELDING, 15 hands or over, to be driven in harness on the 2nd day of the Show . . .	10	5	2
(The Prizes in Class 29 are offered by the Bath Local Committee.)			
29.—Pair of Carriage Horses (Mares or Geldings), to be driven in double harness on the 2nd day of Show .	**10**	**5**	**2**
30.—MARE or GELDING, over 14.2 and under 15 hands, to be driven in harness on the 3rd day of the Show .	10	5	2
31.—TROTTING. Best MARE, STALLION, or GELDING under 15 hands, for speed and action, to be driven in harness on the 3rd day of the Show . .	10	5	2

HORSES—*continued.*

CLASS	First Prize.	Second Prize.	Third Prize
	£	£	£
32.—MARE or GELDING, not over 13 2 hands, to be driven in harness on the 4th day of the Show . .	10	5	2
33.—TROTTING. Best MARE, STALLION or GELDING, 15 hands or over, for speed and action, to be driven in harness on the 4th day of the Show . .	10	5	2
(The Prizes in Classes 34 to 37 are offered by the Bath Local Committee).			
34.—Mare or Gelding, over 14 hands, the property of a resident within a radius of eight miles from the Guildhall, Bath, and that has been such for not less than three months prior to the date of the Show. To be driven in harness on the 4th day of the Show	5	3	2
35.—Dray or Cart Mare or Gelding, suitable for and having been worked by a Bath Brewer, Builder, Timber Merchant, Railway Company, Haulier, Tradesman, or the Corporation for not less than three months immediately prior to the date of the Show. To be exhibited with gear on the 5th day of the Show	5	3	2
36.—Light Mare or Gelding, bona fide the property of a Tradesman or Firm carrying on business within the Municipal Borough of Bath, which has been regularly used for the purpose of his business for not less than three months immediately prior to the 1st day of May, 1912. The general turnout to be taken into consideration. To be exhibited with trade vehicle and harness on the 5th day of the Show . . .	5	3	2
37.—Mare or Gelding, not over 14 hands, the property of a resident within a radius of eight miles from the Guildhall, Bath, and that has been such for not less than three months prior to the date of the Show. To be driven in harness on the 5th day of the Show .	5	3	2
(Special Prize offered by the Hackney Horse Society.)			
A Prize of £5 or a Gold Medal for the Best Mare or Gelding exhibited in Single Harness in Classes 26 to 37, subject to Condition 52	5		

HORSES—*continued.*

JUMPING.

(For Regulations as to Jumping Classes see Condition 54.)

ENTRIES CLOSE { With Boxes—March 22, or at double fees March 29. Without Boxes—May 3.

Horses can be entered in as many Jumping Classes as they are eligible for on payment of the entry fee for each Class, and can take second or third prize in each Class, but only one first prize in Classes 38 to 47.

Horses entered in the Jumping Classes **only**, and not having a box in the Yard, must be in the Show Yard by 2 p.m. on the day on which they compete and, with the consent of the Stewards, may leave the Yard as soon as the Class has been judged.

Class	First Prize.	Second Prize.	Third Prize
38.—Mare or Gelding, 15 hands and over, that shall jump in the best form on the 1st day of the Show.	10	5	2
39.—Mare or Gelding, under 15 hands, ditto, ditto	10	5	2
40.—Mare or Gelding, 15.3 hands and over, that shall jump in the best form on the 2nd day of the Show	10	5	2
41.—Mare or Gelding, under 15.3 hands, ditto, ditto	10	5	2
42.—Mare or Gelding, 15 hands and over, that shall jump in the best form on the 3rd day of the Show	10	5	2
43.—Mare or Gelding, under 15 hands, ditto, ditto	10	5	2
44.—Mare or Gelding, 15.3 hands and over, that shall jump in the best form on the 4th day of the Show	10	5	2
45.—Mare or Gelding, under 15.3 hands, ditto, ditto	10	5	2
46.—Mare or Gelding, 15 hands and over, that shall jump in the best form on the 5th day of the Show	10	5	2
47.—Mare or Gelding, under 15 hands, ditto, ditto	10	5	2

CHAMPION CLASS.

£10 of the amount offered in Class 48 is contributed by the Bath Local Committee.

Class	First Prize.	Second Prize.	Third Prize
48.—Mare or Gelding, any height, having won a Prize in Class 38 to 47, that shall jump in the best form on the 5th day of the Show . . .	20		

(In this Class the whole of the Jumps will be raised at the discretion of the Stewards).

The Entry Fee will be returned in the case of Horses entered in Class 48, but afterwards found to be ineligible.

	First Prize.	Second Prize.	Third Prize
# CATTLE.	£	£	£
DEVON.			
(£10 towards the Prizes in Classes 49 to 55 is contributed by the Devon Cattle Breeders' Society.)			
CLASS			
49.—Cow, in-Milk, calved before 1909	10	5	2
50.—HEIFER, in-Milk, calved in 1909	10	5	2
51.—HEIFER, calved in 1910	10	5	2
52.—HEIFER, calved in 1911	10	5	2
53.—BULL, calved in 1908 or 1909	10	5	2
54.—BULL, calved in 1910	10	5	2
55.—BULL, calved in 1911	10	5	2
CHAMPION PRIZES.			
(Offered by the Somerset County Agricultural Association.)			
Best Cow or Heifer in Classes 50 to 52	10		
Best Bull in Class 54 or 55	10		
SOUTH DEVON.			
(The Prizes in Class 56 are offered by the South Devon Herd Book Society).			
56.—Cow in-Milk, calved before 1909	10	5	2
57.—HEIFER, in-Milk, calved in 1909	10	5	2
58.—HEIFER, calved in 1910	10	5	2
59.—HEIFER, calved in 1911	10	5	2
60.—BULL, calved in 1908 or 1909	10	5	2
61.—BULL, calved in 1910	10	5	2
62.—BULL, calved in 1911	10	5	2
SHORTHORN.			
(The 1st Prize in Class 63 is offered by the Shorthrn Society, and the 1st Prize in Class 64 by the Dairy Shorthorn (Coates's Herd Book) Association.)			
63.—Pedigree Dairy Cow, in-Milk, four years old and upwards on May 22nd, eligible for, and entered in Coates's Herd Book, or pedigree sent for such entry previous to the Show, and not having previously won a similar prize offered by the above-named Society or Association in 1912, to be milked in the ring before judging, under Conditions 63	10	5	
64.—Ditto under four years old ditto ditto	10	5	
65.—Cow, in-Milk, calved before 1908	10	5	2
66.—HEIFER, in-Milk, calved in 1909	10	5	2

	First Prize.	Second Prize.	Third Prize
CATTLE—*continued.*	£	£	£
CLASS			
67.—HEIFER, calved in 1910	10	5	2
68.—HEIFER, calved in 1911	10	5	2
69.—BULL, calved in 1908 or 1909	10	5	2
70.—BULL, calved in 1910	10	5	2
71.—BULL, calved in 1911	10	5	2
CHAMPION PRIZE.			
(Offered by the Shorthorn Society.)			
Best Bull in Classes 69, 70 or 71, entered in, or eligible for entry in, Coates's Herd Book	10		
HEREFORD.			
72.—Cow, in-Milk, calved before 1909	10	5	2
73.—HEIFER, in-Milk, calved in 1909	10	5	2
74.—HEIFER, calved in 1910	10	5	2
75.—HEIFER, calved in 1911	10	5	2
76.—BULL, calved in 1908 or 1909	10	5	2
77.—BULL, calved in 1910	10	5	2
78.—BULL, calved in 1911	10	5	2
CHAMPION PRIZES.			
(Offered by the Hereford Herd Book Society.)			
Best Cow or Heifer in Classes 72 to 75	10		
Best Bull in Classes 76 to 78	10		
SUSSEX.			
79.—Cow or HEIFER, in-Milk, calved before 1910	10	5	2
80.—HEIFER, calved in 1910	10	5	2
81.—HEIFER, calved in 1911	10	5	2
82.—BULL, calved in 1908, 1909 or 1910	10	5	2
83.—BULL, calved in 1911	10	5	2
SPECIAL PRIZES.			
(Offered by the Sussex Herd Book Society.)			
A Silver Medal for the Best Cow or Heifer, in Classes 79, 80 or 81.			
A Silver Medal for the Best Bull in Classes 82 or 83.			
ABERDEEN-ANGUS.			
(The 1st Prize in Class 84 is offered by the English Aberdeen-Angus Cattle Association.)			
84.—Cow or HEIFER, in-Milk, calved before 1st Dec., 1909	10	5	2
85.—HEIFER, calved on or after 1st Dec., 1909	10	5	2
86.—HEIFER, calved on or after 1st Dec., 1910	10	5	2
87.—BULL, calved before Dec. 1, 1910	10	5	2
88.—BULL, calved on or after Dec. 1, 1910	10	5	2

	First Prize.	Second Prize.	Third Prize
CATTLE—*continued.*	£	£	£
CHAMPION PRIZES			
(Offered by the Aberdeen-Angus Cattle Society.)			
A Gold Medal, value £10, for the Best Animal in Classes 84 to 88.			
(Offered by the English Aberdeen-Angus Cattle Association.)			
A Silver Medal for the Best Animal of opposite Sex to that awarded the Gold Medal in Classes 84 to 88.			
JERSEY.			
(The Prizes in Class 89 are offered by the English Jersey Cattle Society.)			
CLASS			
89.—Cow or Heifer, in-Milk, entered in or eligible for entry in the English Jersey Herd Book, bred by Exhibitor, and sired in Great Britain or Ireland	**5**	**3**	**2**
90.—Cow, in-Milk, calved before 1909	10	5	2
91.—Cow or HEIFER, in-Milk, calved in 1909	10	5	2
92.—HEIFER, in-Milk, calved in or since 1910	10	5	2
93.—HEIFER, calved in 1911	10	5	2
94.—BULL, calved in 1908 or 1909	10	5	2
95.—BULL, calved in 1910	10	5	2
96.—BULL, calved in 1911	10	5	2
SPECIAL PRIZE.			
(Offered by the Royal Jersey Agricultural Society.)			
Best Bull in Classes 94, 95, or 96, whose dam has won a prize or certificate of merit in any Butter Test Competition recognised by the English Jersey Cattle Society	**£ s. 10 10**		
GUERNSEY.			
(The 1st Prize in Class 97 is offered by the English Guernsey Cattle Society.)			
97.—Cow, in-Milk, calved before 1909	10	5	2
98.—HEIFER, in-Milk, calved in 1909	10	5	2
99.—HEIFER, calved in 1910	10	5	2
100.—HEIFER, calved in 1911	10	5	2
101.—BULL, calved in 1908 or 1909	10	5	2
102.—BULL, calved in 1910	10	5	2
103.—BULL, calved in 1911	10	5	2
104.—Cow or HEIFER, in-Milk, calved in or before 1909	10	5	2
105.—HEIFER, calved in 1910 or 1911	10	5	2
106.—BULL, calved in 1909, 1910 or 1911	10	5	2

	First Prize.	Second Prize.	Third Prize
CATTLE—*continued.*	£	£	£

KERRY.

SPECIAL PRIZES.

(Offered by B. de Bertodano, Esq.)

For Best Animal in Classes 104, 105 or 106, to which the Cup has not previously been awarded.

The Bertodano Challenge Cup, value 25 Guineas. The Cup to become the property of an Exhibitor winning it three years in succession.

The English Kerry and Dexter Cattle Society will present a Silver Medal to the owner of the winning animal on each occasion the Cup is competed for.

DEXTER KERRY.

Class	First Prize. £	Second Prize. £	Third Prize £
107.—Cow or Heifer, in-Milk, calved in or before 1909 .	10	5	2
108.—Heifer, calved in 1910 or 1911	10	5	2
109.—Bull, calved in 1909, 1910 or 1911	10	5	2

(The Prizes in Class 110 are offered by the English Kerry and Dexter Cattle Society.)

110. -Bull, calved in 1911, whose sire and dam are entered in the English Kerry and Dexter or Royal Dublin Society's Herd Book	**10**	**3**	**2**

SPECIAL PRIZE

(Offered by the English Kerry and Dexter Cattle Society.)

The Devonshire Challenge Cup, for the Best Animal in Classes 107 to 110, bred by Exhibitor, and entered in or eligible for the English Kerry and Dexter Herd Book. The Cup to be won by the same Exhibitor with different animals three years in succession before becoming his absolute property.

A Silver Medal will be presented to the owner of the winning animal on each occasion the Cup is competed for.

DAIRY.

(*See Regulation* 65).

Animals entered in the Breed Classes can, if eligible, be entered also, on payment of the additional fee, in Classes 111 *to* 115.

(The Prizes in Class 111 are offered by the Somerset County Agricultural Association.)

111.—Shorthorn or Cross-bred Dairy Cow, of any age . .	**5**	**3**	**2**

	First Prize.	Second Prize.	Third Prize
	£	£	£
CATTLE—*continued.*			
CLASS			
112.—Cow, in-Milk, of any breed or cross, under 900 lbs. live weight, yielding the largest quantity of milk, of normal character, containing at each time of milking 12 per cent. of total solids, of which not less than 3 per cent. shall be fat, the period of lactation being taken into consideration . .	10	5	2
113.—Cow, in-Milk, of any breed or cross, 900 lbs. live weight or over, ditto, ditto	10	5	2
BUTTER-TEST.			
(*See Regulation* 65.)			
114.—The following Prizes are offered by the English Jersey Cattle Society, and entries in them are subject to any conditions issued by that Society previous to the tests.	**Gold Medal** or	**Silver Medal** or	**Bronze Medal** or
Cow, eligible for or entered in the English Jersey Herd Book, obtaining the greatest number of points by the practical test of the separator and churn, judged by the scale of points adopted by the English Jersey Cattle Society	**10**	**5**	**3**
Certificates of Merit will also be awarded to Cows reaching the E.J.C.S. Standard of Merit.			
SPECIAL PRIZE			
For the best quality of Butter produced by a Certificated or Prize Cow in Class 114	**1**		
(The Prizes in Class 115 are offered by the English Guernsey Cattle Association.)			
115.—Guernsey Cow or Heifer, entered in the English Guernsey Cattle Society's Herd Book, or eligible and tendered for entry therein, obtaining the greatest number of points by the practical test of the Churn, the points to be reckoned on the weight of Butter and an allowance for lactation to be made under the scale settled by the English Guernsey Cattle Society .	**10**	**5**	**3**
DAIRY HERDS.			
212.—HERD of over 40 DAIRY Cows, the property of a bona-fide tenant farmer farming land in the County of Somerset, Wilts, or Gloucester	20	10	5
213.—HERD of not less than 20 and not over 40 DAIRY Cows, ditto	15	7	3

SHEEP.

	First Prize	Second Prize.	Third Prize
	£	£	£
COTSWOLD.			
(£11 towards the Prizes in Classes 116 to 118 is contributed by Members of the Cotswold Sheep Breeders' Society.)			
CLASS			
116.—Shearling RAM	10	5	2
117.—Pair of RAM LAMBS, dropped in 1912	10	5	2
118.—Pen of three Shearling EWES	10	5	2
DEVON LONGWOOLLED.			
(£10 towards the Prizes in Classes 119 to 121 is contributed by the Devon Longwoolled Sheep Breeders' Society.)			
119.—Shearling RAM	10	5	2
120.—Pair of RAM LAMBS, dropped in 1912	10	5	2
121.—Pen of three Shearling EWES	10	5	2
SOUTH DEVON.			
122.—Shearling RAM	10	5	2
123.—Pen of three Shearling EWES	10	5	2
KENT OR ROMNEY MARSH.			
(The Prizes in Class 124 are offered by the Kent or Romney Marsh Sheep Breeders' Association.)			
124.—Two Shear Ram	10	5	2
125.—Shearling RAM	10	5	2
126.—Pen of three Shearling EWES	10	5	2
SOUTHDOWN.			
(The Prizes in Class 127 are offered by the Southdown Sheep Society.)			
127.—Two Shear Ram	10	5	2
128.—Shearling RAM	10	5	2
129.—Pair of RAM LAMBS, dropped in 1912	10	5	2
130.—Pen of three Shearling EWES	10	5	2
SPECIAL PRIZE.			
(Offered by the Southdown Sheep Society, under Condition 68.)			
Silver Medal or £1 for the Best Ram or Ram Lamb in Classes 127, 128, or 129.			
HAMPSHIRE DOWN.			
131.—Shearling RAM	10	5	2
132.—Pair of RAM LAMBS, dropped in 1912	10	5	2
133.—Pen of three Shearling EWES	10	5	2

	First Prize.	Second Prize.	Third Prize
SHEEP—*continued.*	£	£	£
(The Prizes in Class 134 are offered by the Hampshire Down Sheep Breeders' Association.)			
CLASS			
134.—Pen of three Ewe Lambs, dropped in 1912	7	3	
SHROPSHIRE.			
135.—Shearling RAM	10	5	2
136.—Pen of three Shearling EWES	10	5	2
OXFORD DOWN.			
137.—Shearling RAM	10	5	2
138.—Pair of RAM LAMBS, dropped in 1912	10	5	2
139.—Pen of three Shearling EWES	10	5	2
(The Prizes in Class 140 are offered by the Oxford Down Sheep Breeders' Association, and will be withheld until the Animals awarded the prizes are registered in the Flock Book.)			
140.—Pair of Ewe Lambs, dropped in 1912	6	3	1
DORSET HORN.			
141.—Shearling RAM	10	5	2
142.—Pair of RAM LAMBS, dropped after Nov. 1, 1911	10	5	2
143.—Pen of three Shearling EWES	10	5	2
(The Prizes in Class 144 are offered by the Dorset Horn Sheep Breeders' Association.)			
144.—Pen of three Ewe Lambs, dropped after November 1st, 1911	10	3	2
CHAMPION PRIZES.			
(Offered by the Somerset County Agricultural Association.)			
Best Ram or Ram Lamb in Class 141 or 142	4		
Best Ewe or Ewe Lamb in Class 143 or 144	4		
DORSET DOWN.			
(The Prizes in Class 145 are offered by the Dorset Down Sheep Breeders' Association.)			
145.—Shearling Ram	10	5	2
146.—Pair of RAM LAMBS, dropped in 1912	10	5	2
147.—Pen of three Shearling EWES	10	5	2

Class		First Prize.	Second Prize.	Third Prize
	SHEEP.—*continued.*	£	£	£
	EXMOOR HORN.			
	(The Prizes in Class 148 are offered by the Exmoor Horn Sheep Breeders' Society.)			
148.	**—Old Ram, 2 Shear and upwards**	**10**	**5**	**2**
149.	—Shearling RAM	10	5	2
150.	—Pen of three Shearling EWES	10	5	2
	CHAMPION PRIZE.			
	(Offered by the Somerset County Agricultural Association.)			
	Best Ram, of any age, in Class 148 or 149	**4**		

PIGS.

Class		First Prize.	Second Prize.	Third Prize
	BERKSHIRE.			
151.	—BOAR, farrowed in 1909, 1910 or 1911	7	3	2
152.	—Pair of BOARS, farrowed in 1912	5	2	1
153.	—Breeding Sow, farrowed before 1912	7	3	2
154.	—Pair of Breeding Sows, farrowed in 1912	5	2	1
	SPECIAL PRIZE.			
	(Offered by the British Berkshire Society.)			
	Best Boar or Sow in the Berkshire Classes entered in, or eligible for, the Herd Book, whose Sire and Dam, together with the name of its Breeder, are entered in the Catalogue	**5**		
	LARGE BLACK.			
155.	—BOAR, farrowed in 1909, 1910 or 1911	7	3	2
156.	—Pair of BOARS, farrowed in 1912	5	2	1
157.	—Breeding Sow, farrowed before 1912	7	3	2
	(The Prizes in Class 158 are offered by the Large Black Pig Society.)			
158.	**—Breeding Sow, not exceeding 12 months old on May 1st, 1912**	**7**	**3**	**2**
159.	—Pair of Breeding Sows, farrowed in 1912	5	2	1
	CHAMPION PRIZE			
	(Offered by the Somerset County Agricultural Association.)			
	Best Exhibit in Classes 155 to 159	**4**		

PIGS—*continued*.

	First Prize.	Second Prize.	Third Prize
	£	£	£
LARGE WHITE.			
CLASS			
160.—BOAR, farrowed in 1909, 1910 or 1911	7	3	2
161.—Pair of BOARS, farrowed in 1912	5	2	1
162.—Breeding Sow, farrowed before 1912	7	3	2
163.—Pair of Breeding Sows, farrowed in 1912 . .	5	2	1
MIDDLE WHITE.			
164.—BOAR, farrowed in 1909, 1910 or 1911	7	3	2
165.—Pair of BOARS, farrowed in 1912	5	2	1
166.—Breeding Sow, farrowed before 1912	7	3	2
167.—Pair of Breeding Sows, farrowed in 1912 . .	5	2	1
TAMWORTH.			
168.—BOAR, farrowed in 1909, 1910, or 1911	7	3	2
169.—Pair of BOARS, farrowed in 1912	5	2	1
170.—Breeding Sow, farrowed before 1912	7	3	2
171.—Pair of Breeding Sows, farrowed in 1912 . .	5	2	1

SPECIAL PRIZES.

(Offered by the National Pig Breeders' Association.)

Three Gold Medals, value £3 3s. each (or £3 3s. in money), for the best animal of each Breed exhibited in the Large White, Middle White, or Tamworth Classes, entered in or eligible for the Herd Book, and the names and numbers of whose sire and dam appear in the Catalogue.

No animal can win more than one of the Association's Gold Medals in the same year, and in the event of the winning animal being again awarded the Medal at the Royal Agricultural Society's Meeting, the animal awarded the Reserve number would succeed to the prize. No pig farrowed on or after January 1st, 1910, will be eligible to receive any Medal or Prize offered by the N.P.B.A., unless the said animal has been tattooed strictly in accordance with the regulations of the Association.

ANY BREED.

	First Prize.
(The Prizes in Classes 172 and 173 are offered by Messrs. Chas. and Thos. Harris & Co., Ltd., Calne, Wilts.)	
172.—Boar most suitable for producing the best Class of Pigs for Wiltshire Bacon	**Silver Cup, value £5 5s.**
173.—Hilt or Sow, ditto, ditto	**ditto**

PRODUCE.

CIDER.

(Open to Growers or Makers.)

First Prize in each of the Classes a Gold Medal and a Certificate.

Second Prize, ditto, a Silver Medal and a Certificate.

Third Prize ditto, a Bronze Medal and a Certificate.

CLASS

174.—Cask of not less than 18 and not more than 30 gallons of CIDER, of the 1911 vintage of a specific gravity not exceeding 1 015 at 60° Fahr

175.—12 Bottles of CIDER, of the 1911 vintage, ditto.

176.—Cask of not less than 18 and not more than 30 Gallons of CIDER, of the 1911 vintage.

177.—12 Bottles of CIDER, of the 1911 vintage.

178.—12 Bottles of CIDER, of any year previous to 1911 vintage.

CHEESE.	First Prize.	Second Prize.	Third Prize
	£	£	£
179.—3 Cheddar CHEESES (not less than 56 lbs. each) made in 1911	15	10	5
180.—3 Cheddar CHEESES (not over 56 lbs. each) made in 1911	8	5	3
(The Prizes in Class 181 are offered by the Somerset Agricultural Instruction Committee.)			
181.—3 Large or 6 Truckle Cheddar Cheeses, made in 1912, by a Student who has received instruction in the Somerset County Council or Western Counties Cheese School	5	3	2
182.—3 Single Gloucester or Wilts CHEESES made in 1912	6	4	2
183.—3 Loaf or other Truckle CHEESES made in 1911 .	5	3	2
184.—3 Caerphilly CHEESES, made in 1912 . . .	5	3	2
(The Prizes in Class 185 are offered by the Somerset Agricultural Instruction Committee.)			
185.—3 Caerphilly Cheeses, made in 1912, by a Student who has received instruction in the Somerset County Council or Western Counties Cheese School	3	2	1
SPECIAL PRIZES.			
(Offered by the Somerset County Agricultural Association, and open only to exhibits made by residents in Somerset.)			
Best Exhibit of Cheddar Cheese, made in 1911, in the foregoing Classes	5		
Best Exhibit of Cheddar Cheese, made in 1912, in the foregoing Classes	5		

PRODUCE—*continued.*

CREAM CHEESE, BUTTER & CREAM.

(*These Classes are not open to Professional Teachers.*)

Class	First Prize. £ s.	Second Prize. £ s.	Third Prize. £ s.	Fourth Prize. £ s.
186.—3 Cream of other Soft Cheeses . . .	3 0	2 0	1 0	0 10
187.—3 lbs. of Fresh (or very slightly salted) Butter	4 0 4 0	3 0 3 0	2 0 2 0	1 0 1 0
188.—3 lbs. of Fresh (or very slightly salted) Butter, made from scalded cream .	4 0	3 0	2 0	1 0
189.—3 lbs. of Butter, to which no salt whatever has been added, to be judged on the last day of Show	4 0	3 0	2 0	1 0
190.—Not less than 12 lbs. of Fresh Butter packed for transit	3 0	1 10		
191.—12 lbs. of Keeping Butter, in a jar or crock, to be delivered to the Secretary 4 weeks before the Show	4 0	3 0	2 0	1 0
192.—4 half-pounds of Scalded Cream . . .	3 0	2 0	1 0	0 10
(The Prizes in Classes 193 and 194 are offered by the Somerset Agricultural Instruction Committee.)				
193.—3 lbs. of Fresh (or very slightly salted) Butter, made by a Student of the Somerset County Butter School	2 10	1 10	1 0	
194.—2 lbs. of Whey Butter, made by a Student of the Somerset County Dairy Schools .	1 10	1 0	0 10	
SPECIAL PRIZES.				
(Offered by the Somerset County Agricultural Association, and open only to residents in the County of Somerset.)				
Best Exhibit of Butter made from the Produce of Cows of the Channel Islands breed, in the foregoing classes	2 0			
Best Exhibit of Butter, made from the produce of Cows of any breed other than Channel Islands, in the foregoing Classes	2 0			

COMPETITIONS.

BUTTER-MAKING.

(*No Winner of a first prize given by this Society for Butter-making during the last* 3 *years is eligible to compete in Classes* 195, 197 *or* 199.)

(*For Conditions and Regulations see Entry Form.*)

(**The Prizes in Classes 196, 198, 200, 202 and 204 are offered by the Somerset Agricultural Instruction Committee.**)

Class	First Prize. £ s.	Second Prize. £ s.	Third Prize. £ s.	Fourth Prize. £ s.
195.—For first year students who have been through a course of instruction in Butter-making at any County Council School since the Society's last Show. On the 1st day of the Show	4 0	3 0	1 10	1 0
196.—For Students of the Somerset County Butter School, who have been through a course of instruction since May 27th, 1911, on the 1st day of Show	2 0	1 10	1 0	0 10
197.—For Men and Women, on the 2nd day of the Show	4 0	3 0	1 10	1 0
198.—For Students of the Somerset County Butter School, who have never won a Prize in any Competition other than those held in connection with the School, on the 2nd day of Show	2 0	1 10	1 0	0 10
199.—For Men and Women, on the 3rd day of the Show	4 0	3 0	1 10	1 0
200.—For Students of the Somerset County Butter School, who have never won a First Prize at any Show, on the 3rd day of Show	2 0	1 10	1 0	0 10
201.—For Men and Women, on the 4th day of the Show	4 0	3 0	1 10	1 0
202.—For Students of the Somerset County Butter School, on the 4th day of Show	2 0	1 10	1 0	0 10

Champion Classes.

203.—For winners of first and second prizes in the Butter-making Classes 195, 197, 199, or 201, or at any previous meeting of the Society. On the 5th day of the Show—

1st Prize, Gold Medal.
2nd ,, Silver Medal.
3rd ,, Bronze Medal.

	First Prize.		Second Prize.		Third Prize.		Fourth Prize.	
BUTTER-MAKING—*continued.*	£	s.	£	s.	£	s.	£	s.
CLASS								
204.—For winners of First and Second Prizes in Classes 196, 198, 200 and 202, on the 5th day of the Show—								
1st Prize, Gold Medal.								
2nd „ Silver Medal.								
3rd „ Bronze Medal.								
MILKING.								
205.—For Men 18 years of age and over	1	10	1	0	0	15	0	10
206.—For Women 18 years of age and over	1	10	1	0	0	15	0	10
207.—For Boys and Girls under 18 years of age	1	10	1	0	0	15	0	10
SHOEING.								
208.—For NAG HORSE SHOEING, by Smiths 25 years of age and over on the day of the competition, who have not previously won the First Prize in a corresponding Class at one of the Society's meetings, or a Champion Prize at any National or County Agricultural Society's Show, on the 2nd day of the Show	4	0	3	0	2	0	1	0
209.—For CART HORSE SHOEING, by Smiths 25 years of age and over, ditto, ditto, on the 3rd day of the Show	4	0	3	0	2	0	1	0
210.—For SHOE MAKING or TURNING, by Smiths under 25 years of age on the day of the competition, the patterns and descriptions of the Shoes to be supplied by the Judge, on the 4th day of the Show	4	0	3	0	1	0	0	10
211.—For SHOE MAKING or TURNING, by Smiths 25 years of age and over on the day of the competition, the patterns and descriptions of the Shoes to be supplied by the Judge, on the 4th day of the Show	4	0	3	0	2	0	1	0

CONDITIONS AND REGULATIONS FOR LIVE STOCK.

GENERAL.

Entries.

1. The following are the Fees payable for Stock entries made on or before March 22. After that date and up to March 29, entries (except in the Harness and Jumping Classes) will only be received on payment, in each case, of double the fee named below. *Exhibitors are requested to note that no exception can be made to this.* The entry fee is not returnable to an Exhibitor who enters an Animal in a Class for which it is ineligible, or for entries that are withdrawn after the date of entry has expired.

	Members. (see Reg. 5 below)	Non-Members.
Horses other than in the Harness or Jumping Classes (see Reg. 2 below) for each Entry, including Horse Box	15s.	30s.
Cattle, Sheep and Pigs for each Entry	10s.	20s.

For particulars as to fees in the Produce, Poultry, Butter-Making, Milking, and Shoeing Classes, see Entry forms.

2. Animals entered in the Harness and Jumping Classes, and not having a box in the Yard, must be in the Yard by 2 p.m. on the day on which they compete, and, with the consent of the Stewards, may leave the Yard as soon as they have been judged. Entries in the Harness and Jumping Classes, if no Horse Box is required, must reach the Secretary not later than May 3. If a Box is required the entry must reach the Secretary on or before March 22, or, at double fees, by March 29. The Entry Fees are :—

	Members.	Non-Members.
Without Horse Box, for each Entry	5s.	10s.
With Horse Box, do.	15s.	30s.
Local Tradesmen's Classes (without Horse Box)	2s. 6d.	5s.

3. No Exhibitor can make more than three entries in any one Class of Horses Cattle, Sheep or Pigs, except in the Harness or Jumping Classes.

4. No Entry will be received unless the fee accompanies it, and (if the Exhibitor is a Member of the Society) the subscription for the year, unless previously paid, together with any arrears that may be due.

5. The privilege of entering at Members' fees is strictly limited to members of the Society or of the Somerset County Agricultural Association, elected on or before January 30, 1912, and subscribing not less than £1 annually.

6. Where a Prize is offered for a *pair* or *pen* of Animals, single entry-fees only are payable for each *pair* or *pen*, and only one entry-form must be used.

7. All Entries must be made on the printed forms to be obtained of the Secretary (Thos. F. Plowman, 3, Pierrepont Street, Bath), and, in applying for Forms, Exhibitors are requested to state how many entries they wish to make of either Horses, Cattle, Sheep or Pigs, as each Stock entry must be made on a separate form.

8. Every Exhibitor or Competitor is requested to carefully examine the List of Prizes and Conditions, as he will be held responsible for the correctness of his Certificate of Entry. An Exhibitor omitting to give information asked for on the Entry Form, with regard to the age, breeder, name, colour, sire, dam, &c., of an animal will be liable to have his entry disqualified, and if an exhibitor desires that his animal shall compete for any special prize, he must notify this on the entry form.

9. If an Exhibitor or Competitor fails, when called upon by the Stewards or Council, to prove the correctness of his Certificate of Entry to their satisfaction, the Entry may be disqualified, and any award made to it cancelled.

10. An Exhibitor who has made, in due time, an entry of Horses, Cattle, Sheep or Pigs, in a particular class, will be permitted, up to Friday, April 19, to withdraw the entry of such animal, and to substitute for it the entry of another animal in the same class, on payment of the difference, if any, between the amount of the entry fee originally paid for the animal withdrawn, and the post entry fee. When, after entry, an animal dies, the exhibitor will be permitted to substitute another entry for it, in the same class, without payment of any further fee, upon affording evidence of death and furnishing particulars of the substituted entry in time for the alteration to be made in the published catalogue.

11. An animal can be entered in as many Classes as it is eligible for on payment of an additional fee in each Class. No additional fee is, however, payable in the case of Special Prizes for exhibits already entered in any particular class.

12. Every exhibit must be the *bona fide* property of the Exhibitor both at the time of entry and on the first day of the Exhibition.

Show Yard.

13. The Yard will be open for the reception of Horses (see Regulation 2 for Harness and Jumping Horses), Cattle, Sheep and Pigs, on Monday and Tuesday, May 20 and 21, from 7 A.M. to 6 P.M. Agricultural Horses and Hunters will also be received from 6 to 8 o'clock on the morning of the first day of Show, but all other Stock Entries (except Hackneys and Ponies, which must be in the Yard before 8 a.m. on Saturday, May 25), must be in the Yard the previous day. A label denoting the number of each entry will be sent by the Secretary and must be securely affixed to the head of the Animal. The carriage of exhibits must in all cases be paid by the Exhibitor. No exhibit subject to charges will be received by the Officers of the Society.

14. If an animal is brought into the Show Yard without having been entered for exhibition, the owner shall be liable to a fine of £2 and to the forfeiture of any prize awarded to him or her.

15. All Live Stock (see Conditions 2, 13, 39 and 40 for exceptions with regard to Horses) must remain in their places in the Show Yard until after 6 o'clock in the afternoon of the last day of the Show, and shall under no circumstances be taken out of their places in the interval without the special permission of the Stewards.

16. During the time the Show is open to the public no rug or cloth shall be hung up so as to conceal any animal in a horse-box or stall, except with the special permission of the Steward of the department. All sheets used for the purpose must be removed before the time at which the exhibition is open to the public and must not be replaced until after the closing hour of the Show each day.

17. All Exhibits and all persons in charge of the same, will be subject to the Orders, Regulations and Rules of the Society, and the Stewards shall have the power to remove from the Yard the Stock or property belonging to, and to cancel the admission ticket of, any Exhibitor who shall infringe any of the Regulations or Conditions of the Meeting, or who shall refuse to comply with any instructions given by the Stewards, without any responsibility attaching to the Stewards or the Society in consequence of such removal.

18. No animal shall be decorated with colours other than the Society's Prize Rosettes.

19. No person shall be allowed to fix any placard, or to take down any official placard, in the Yard, without the written permission of the Stewards.

20. All persons in charge of Exhibits will be subject to the orders of the Stewards, and will be required to parade or exhibit the animals in their charge at such times as may be directed by the Stewards. Servants must be in attendance each day during the Show at least a quarter of an hour before the time appointed for exhibiting the animals under their charge in the Show rings. Servants in charge of animals must see that the animals' boxes or stalls are kept clean. No oil or cooking stove of any description must be lighted in the Horse Boxes and any one found offending in this respect will be dealt with in accordance with Regulation 33. Owners of animals exhibited will be held responsible for the behaviour of their Servants, and for the consequences of any misconduct of such Servants.

21. Servants in charge of Stock at night must, if they leave the yard, return before 10 p.m., or they will not be admitted.

22. On the day previous to the opening and on each day of the Show hay or green food and straw will be supplied by the Society free of expense to exhibitors at the Forage Stores in the Show Yard. Servants must apply at the Forage Stores for their Forage Tickets after they have brought their animals into the Yard. Corn, meal, and cake can be obtained in the Show Yard at fixed prices.

NOTE.—For the convenience of Exhibitors wishing to sell their animals, a Register will be kept at the Secretary's Office, in which they may enter the prices.

TICKETS.

23. Each Exhibitor of Live Stock will have a Free Ticket of admission to the Show Yard sent to him, except in the case of a Member of the Society, who will receive his Member's Ticket in lieu of an Exhibitor's Ticket. Tickets for the use of Servants in charge of Live Stock remaining in the Yard will also be sent, and the Exhibitor will he held responsible for the proper use of such Tickets. In the case of animals not having a box in the Yard, a Servant's Ticket will not be required as the official label will admit the Driver or Rider, Horse and Vehicle into the Yard. In case of transfer or other improper use of a Ticket the Exhibitor will be required to pay a fine of £1 for each case. Exhibitors will be held responsible for the attendance at each Parade of as many Servants as Tickets have been issued for.

RESPONSIBILITY.

24. Neither the Society nor any of its Officers or Servants shall be in any way responsible or accountable for anything that may happen (from any cause or circumstance whatever) to Exhibitors or their Servants, or to any animal or article exhibited, or property brought into the Show Yard, or otherwise for anything else in connection with, or arising out of, or attributable to, the Society's Show, or these or any other Conditions or Regulations prescribed by the Society in relation thereto.

25. Each Exhibitor shall be solely responsible for any consequential or other loss, injury, or damage done to, or occasioned by, or arising from, any animal or article exhibited by him, and shall indemnify the Society against all legal or other proceedings in regard thereto.

26. The Society, its Officers and Servants, will not be liable for any errors or mistakes that may happen in placing or penning the Stock or Articles to be exhibited, but the Servants in charge of the same must see that they are placed or penned according to their entries.

DISQUALIFICATIONS.

27. The use of resin, soap, sawdust above the knee, or other substances designed to give an artificial appearance; cording; or any other improper means adopted in showing an animal in the Agricultural Horse Classes will be regarded as a disqualification.

28. No animal which has been exhibited as Fat Stock at any Show shall be eligible to compete for the Prizes offered in this Prize Sheet.

29. An animal having any unsoundness likely to be transmitted to its progeny shall be disqualified thereby from receiving any Prize offered by or through the Society.

30. If it shall be proved to the satisfaction of the Stewards or Council that an Exhibitor or Competitor has knowingly signed an incorrect Certificate, or knowingly given an incorrect Pedigree of any animal, or has attempted to enter an animal or other exhibit or to obtain a Prize by any other unfair means at this or any other Agricultural Society's Meetings, or is under exclusion from any Breed Society for fraudulent practices, the Council shall have the power to cancel all awards made to such Exhibitor or Competitor, to disqualify him or her from exhibiting or competing at future Meetings of the Society, and to inform other Agricultural Associations of their action in this respect.

Penalties.

31. As the non-exhibition of animals entered for the Show causes unnecessary preparations and expense, and disarranges the Show Yard, any person entering Stock, and failing to exhibit the same, shall pay a penalty of 10s. for each entry, unless a Certificate, under the hand of the Exhibitor or his authorised agent, be lodged with the Secretary of the Society, before the day of exhibition, certifying that such non-exhibition is caused either by—(1) the death of the animal or animals; or (2) contagious or infectious disease (confirmed by the explanatory certificate of a Veterinary Surgeon); or (3) by its becoming ineligible for the Class in which it has been entered.

32. Every Exhibitor will be required to undertake to forfeit and pay to the Society the sum of £20, as and for liquidated damages, if any animal which he exhibits be, to his knowledge, suffering from any contagious or infectious disease, and the Stewards are empowered to prevent the entry of any diseased animal into the Yard, or to have it removed therefrom.

33. Any infringement of any of these or any other prescribed Regulations or Conditions will subject the Exhibitor to a fine of £1 by the Stewards, and to the forfeiture, by order of the Council, of any prize to which he may be entitled (in addition to all other consequences attaching to such infringement). The Council reserves to itself the right to inform other Agricultural Associations of any decision it may come to with respect to an Exhibitor.

Awards.

34. The Society reserves to itself the right to withhold any prize, if, in the opinion of the Stewards, the conditions and regulations have not been properly complied with.

35. **In any Class of Stock in which Second and Third Prizes are offered by the Society, and where there are less than three entries, a Silver Medal will be given as Second Prize instead of Money, and where less than six entries, a Bronze Medal will be given as Third Prize instead of Money.**

36. Only the signed awards of the Judges are accepted by the Society as evidence that a prize has been awarded, and the production of the prize card or the rosette by an Exhibitor will not entitle him to the prize.

37. The certificate of the Veterinary Inspector, whether as to age or soundness, shall be required only in cases where the Judges are in doubt, or where the Stewards may consider it necessary. (See also Regulation 47 with reference to Stallions and Mares.) The decision of the Inspector in such cases shall be final and conclusive; and in case it shall be against the animal to which a Prize has been awarded, such animal shall be disqualified from receiving such Prize.

Protests.

38. Any Exhibitor wishing to lodge a protest having reference to Live Stock exhibited at this meeting must make the same in writing on a form to be obtained from the Secretary, and deposit with him the sum of £3. If on investigation the protest is not sustained to the satisfaction of the Stewards, the sum thus deposited shall, at the discretion of the Council, be forfeited to the funds of the Society. All protests (except in the Harness or Jumping Classes) must be delivered at the Secretary's Office in the Showyard, on the day on which the award is made, and no protest will be SUBSEQUENTLY received, unless a reason satisfactory to the Stewards be assigned for the delay. Any protest against an award in the Harness or Jumping Classes must be made to the Steward in the ring immediately after the judging of the class to which it refers, and a deposit of £3 must, at the same time, be handed to the Steward. The Stewards will consider such protests at 11 o'clock on the following day at the Secretary's Office, at which time and place any person making a protest must attend or be represented by his authorised agent. The decision of the Stewards shall be final.

APPLYING TO CERTAIN CLASSES ONLY.

Horses.

39. Horses can be removed from the Yard at night on deposit by the Exhibitor of £3 at the Finance Office, which sum will be forfeited if the Horse does not return at 8 A.M. each day during the Exhibition. This regulation does not apply to Animals not having a box in the Yard entered in the Harness and Jumping Classes only.

40. Exhibitors must provide saddles for Horses in Classes 13, 14, 15 and 38 to 48, as they are to be ridden; and vehicles and harness for those in Classes 26 to 37, which are to be driven.

41. No Horse, unless a Foal, will be admitted into the ring without a proper bit.

42. The Prizes for Stallions in Classes 1 and 20 will be withheld until a certificate from the owner is delivered to the Secretary that the Horse has served at least 10 Mares during the current season.

43. All Foals must be the offspring of the Mares with which they are exhibited, and the name of the Sire of the Foal must be stated on the certificate of entry.

44. Mares entered as in-Foal shall, except as otherwise stated, hereafter be certified to have produced a living Foal before August 1st of the year of the Show. If the required certificate, which must be on a form obtainable from the Secretary, is not received by September 30, 1912, the prize awarded will be forfeited.

45. Horses may, at the discretion of the Stewards, be measured, and the measurement shall be taken in the shoes worn by the entry at the time of judging, and these shoes shall not be removed to allow of the entry being shown in another class.

46. In the Hackney and Harness Classes for Hackneys exceeding 14 hands (except yearling colts and fillies) no shoe (nails included) may exceed 2 lbs. in weight, and for Ponies not exceeding 14 hands, yearling colts and yearling fillies, no shoe (nails included) may exceed 1½ lbs. in weight.

47. All Stallions and Mares (yearlings and foals excepted) to which prizes have been awarded in the breeding classes shall be examined by the Society's Veterinary Inspector, and unless pronounced free from indications of hereditary disease shall be ineligible to receive the prize. The owner of an Animal rejected under this Regulation may, upon his application in writing to the Secretary, be furnished with a copy of the Veterinary Certificate.

48. The following special conditions apply only to the Prizes offered by the Shire Horse Society, viz.: the owner of the animal entered to have been a Member of the Bath and West and Southern Counties Society or Somerset County Agricultural Association, for not less than six months previous to March 22, 1912; a Mare five years old, or upwards, must produce a living Foal in the current year, or have had a living Foal in the preceding year; in the case of in-Foal Mares a certificate of foaling must be lodged with the Secretary of the Shire Horse Society before the medal will be despatched. No animal to compete which has won the Shire Horse Society's Gold Medal during the current year, the Royal and London Shows being excepted; the winning animal to be entered, or eligible for entry, in the Shire Horse Society's Stud Book; and a certificate that she is free from hereditary disease to be lodged with the Secretary of the Shire Horse Society, the Veterinary examination to be made on the ground by the Veterinary Inspector appointed for the Show. A prize of £5 will also be awarded to the breeder of the animal winning the Medal, provided that he is a member of the Shire Horse Society, and that the Dam is a Mare registered in the Shire Horse Stud Book. All awards must be completed within six months of the date upon which the Medal was awarded or they will be void. Gold Medals awarded after January 1, 1911, *will not be redeemable.*

49. The following special conditions apply only to the Prize offered by the Hunters' Improvement Society for Hunter Brood Mares, viz.:—The Mare awarded the Medal must possess a certificate of soundness from hereditary disease, signed by

the Bath and West Society's appointed Veterinary Inspector, who must be a member of the Royal College of Veterinary Surgeons, after his examination of the animal on the Show Ground. Any Hunter Brood Mare, 8 years old or over, having been either awarded one of the Society's Gold Medals in 1911 or 1912, or selected Reserve for same, or having been passed sound after January 1, 1911, by a Veterinary Surgeon appointed by the Hunters' Improvement Society, shall be exempt from further examination upon the owner producing at the time of exhibition the official veterinary certificate issued by the Secretary of the Hunters' Improvement Society.

50. The following special conditions apply only to the Prize offered by the Hunters' Improvement Society for best Mare or Gelding of any age. The Hunter awarded the medal must possess a certificate of soundness from hereditary disease, signed by the Bath and West Society's Veterinary Inspector, who must be a member of the Royal College of Veterinary Surgeons, after his examination of the animal on the Show Ground. The selected Mare, if unregistered, or the selected Gelding, if unentered, must be registered or entered within a month of the award in the Hunter Stud Book. Registered numbers in the Hunter Stud Book will be immediately allotted upon the acceptance of the entry. No animal may take more than one of these medals in 1912.

51. The following special conditions apply only to the Silver Medal offered by The Hackney Horse Society for Hackney Mare or Filly :—

1. No animal to be awarded a Silver Medal which has in the same year taken one of the Hackney Horse Society's £10 Prizes' or Gold Medals (The Royal, London Hackney, and International (Olympia) Shows included).
2. No animal to be eligible to take more than one Silver Medal during any one year (the London Hackney Show excluded).
3. If not already registered in the Stud Book, the entry of the winner must be duly lodged with the Hackney Horse Society, and if not completed before the expiration of one month after the date of the Show the Medal shall pass to the reserve number.
4. A certificate of soundness from hereditary disease, **signed by the Local Society's appointed Veterinary Inspector after his examination on the Show Ground,** must be lodged with the Secretary of the Hackney Horse Society.

NOTE.—Horses in Saddle and Harness Classes are eligible to compete for the Silver Medal, for which they must be exhibited in hand.

52. The following special conditions apply only to the Prize of £5 or Gold Medal offered by the Hackney Horse Society in the Single Harness Classes :—All horses competing for the Prize or Medal must be *by a Registered Hackney Sire.* A certificate signed by the Breeder of the animal must be forwarded to the Secretary of the Hackney Horse Society before the Prize or Medal is despatched. Each animal must be examined by a qualified veterinary surgeon on the Show Ground, and a certificate of soundness must be supplied. The Prize or Medal must be open to all Classes, and not confined to local competition, and the name and number of the sire, and the name and address of the breeder of each animal, should appear in the catalogue. No animal can take more than one of the Harness Prizes or Medals in any one year (the Royal, London Hackney, and International (Olympia) Shows being excepted), but an animal which has been awarded one of the Society's Prizes or Medals under other schemes is eligible.

NOTE.—The winner of a Silver Harness Medal is not debarred from subsequent competition for a Gold Harness Medal in the same year.

53. The following special conditions apply only to the Medals offered by the Polo and Riding Pony Society. Height of Stallions not to exceed 15 hands, and Mares not to exceed 14.2, as confirmed by Hurlingham Certificate or that of a qualified Veterinary Surgeon. Ponies having previously won one of the Polo and Riding Pony Society's Gold or Silver Medals during the current year not to be eligible to compete. No Pony is qualified to take more than one Silver Medal during any one year. The entry of the Winner

must, if not already entered in the Supplement or Registered in the Stud Book, be duly lodged with the Polo and Riding Pony Society before the Medals will be despatched. All Brood Mares to have foal-at-foot or be due to foal in 1912, or if they have foaled in 1912 and the foal has died, a veterinary certificate to the effect that the foal was born alive to be provided. All foals to be by a Thoroughbred, Arab, Registered or Entered Sire.

54. The following special conditions apply to Horses entered in the Jumping Competitions :—The jumps may consist of single hurdle, gate, double hurdle, bank, wall and water jump, at the discretion of the Judge and Stewards. Each horse competing shall have its catalogue number affixed to its breast in such a way that it may be easily seen by the general public. Each horse competing shall be ridden at the fences in the order announced by the Stewards. In case of a horse refusing his fence it shall be allowed two further trials, and *no more*. No change of rider shall take place during the competition. The Judge may take into consideration the style in which the fences are jumped, as well as the height and breadth, and his decision shall be final.

CATTLE.

55. All cattle must be properly secured to the satisfaction of the Officers of the Society, on being brought to the gate of the Yard, or they will not be admitted.

56. All Bulls must have a ring or clamp attached to the nose, and in the aged Classes must be provided with a strong chain, and be led with a proper stick.

57. All cattle will be required to be paraded in the ring at least once a day at the discretion of the Stewards.

58. No Bull calved before January 1st, 1910, or in the Aberdeen-Angus Classes before December 1st, 1909, will be eligible to receive a Prize until certified to have served not less than six different Cows (or Heifers) previous to June 1st, 1912, and to be the sire of live calves dropped in the year 1912, or in the Aberdeen-Angus Classes after December 1, 1911.

59. No Cow or Heifer, entered as in-milk, will be eligible to receive a Prize until certified to have had a living calf within the fifteen months preceding the date of Show, or that the Calf, if dead, was born at the proper time.

60. Every Cow or Heifer in-milk shall be milked dry in the Show Yard at 7.30 p.m. on the evening preceding the day of judging, in the presence of an officer of the Society appointed for the purpose.

61. Any animal in the Cattle Classes found to be artificially coloured will be disqualified.

62. Any person selling milk in the Yard, except in the place appointed by the Stewards, will be fined 5s. for each infringement of this Regulation.

63. The following conditions apply only to the prizes offered for Pedigree Shorthorn Dairy Cows :—The Cows and Heifers entered will be clean milked out on the evening preceding the opening of the Show to the satisfaction of the Stewards and will be again milked in the ring on the first morning of the Show in the presence of the Judge, who shall see the Milk weighed, and any animal not yielding up to the following standard will not be awarded a prize :—

	If she has calved within three calendar months of the first day of the Show.	If she has calved more than three calendar months before the first day of the Show.
Cows, 4 years and upwards, *not less than* ..	25 lbs. of Milk	20 lbs. of Milk
Cows, 3 years old and under 4 " " ..	20 " " "	15 " " "
Heifers, under 3 years old " " ..	15 " " "	10 " " "

64.—In the Kerry and Dexter Classes clipping (except in the case of a few hairs on the top of the tail) will disqualify an animal.

65. The following condition applies to animals entered in the Butter and Milk

Test Classes :—The date of last calving must be given on the entry form and, when an animal calves between the date of entry and that of the Show, notice of such calving must be sent to the Secretary, or the animal may be disqualified.

66. Except in the Local and Dairy Classes, every animal entered for competition must be entered, or certified as eligible to be entered, in the Herd Book of its Breed, where such Herd Book exists and has been in existence for not less than seven years. Where an animal is entered by the Exhibitor as eligible for entry in the Herd Book of its breed, proof of such eligibility must be furnished to the Secretary at the time of making the entry.

Sheep.

67. Each pen of Ewes must be of the same Flock.

68. The following conditions apply to the special prizes offered by the Southdown Sheep Society :—The sheep competing must be entered or eligible for entry in the Flock Book. In the Class for pairs of ram lambs, exhibitors will have the privilege of competing for the medal with any one of their exhibits.

69 Except in the Local Classes, every animal entered for competition must be entered or certified as eligible to be entered, in the Flock Book of its Breed, where such Flock Book exists and has been in existence for not less than seven years. Where an animal is entered by the Exhibitor as eligible for entry in the Flock Book of its breed, proof of such eligibility must be furnished to the Secretary at the time of making the entry.

Pigs.

70. The pair of Pigs in each pen must be of the same litter.

71. All Sows farrowed before 1912 shall be certified to have had a litter of live Pigs within six months preceding the first day of exhibition, or to be in-pig at the time of entering, so as to produce a litter of Pigs, farrowed at their proper time, before the 1st of September following. In the case of in-Pig Sows the Prize will be withheld until the Exhibitor shall have furnished the Secretary with a certificate of farrowing as above. If the required Certificate, which must be on a form obtainable from the Secretary, is not received on or before the 15th September following, the Prize awarded will be forfeited.

72. All Pigs exhibited with a Sow shall be her own produce, of the same litter, and not exceeding two months old at the time of the Show.

73. No Sow above 18 months old that has not produced a litter of live Pigs shall be eligible to compete in any of the Classes.

74. Any animal in the Pig Classes found to be artificially coloured or oiled will be disqualified.

75. Should any question arise as to the age of any exhibit in the Pig classes, the Stewards shall. at the request of the Judge, have the state of their Dentition examined by a competent authority. If the state of the Dentition shall indicate that the age of any of the Pigs does not agree with the Dentition Test, the Stewards shall report the same to the Council, who shall have power to disqualify such Pig or Pigs. The following is the state of Dentition in Pigs which will be considered as indicating that they exceed the ages specified below :—Six Months : Pigs having their corner permanent incisors cut will be considered as exceeding this age. Nine months : Pigs having their permanent tusks more than half up, will be considered as exceeding this age. Twelve Months : Pigs having their central permanent incisors up, and any of the three first permanent molars cut, will be considered as exceeding this age. Fifteen Months : Pigs having their lateral temporary incisors shed, and the permanents appearing, will be considered as exceeding this age. Eighteen Months : Pigs having their lateral permanent incisors fully up will be considered as exceeding this age.

Cider, Dairy Produce, Poultry, Butter-Making, Milking, and Shoeing Competitions.

For Conditions and Regulations see entry forms.

Adjudication of Prizes.

76. The Judges are instructed as follows, and entries are received subject to this :

a. Not to award any Prize or Commendation unless the entry possesses sufficient merit.

b. Not to award a Prize to any Horse or Mare, unless it is free from unsoundness likely to be transmitted to its progeny ; or if a Gelding, unless free from unsoundness ; in either case, an accident having temporary consequences only excepted, and in awarding the Hunters' Improvement Society's Medals to give preference to animals showing weight-carrying properties.

c. In awarding Prizes to Cattle, Sheep and Pigs, to decide according to the relative merits of the animals for Breeding purposes, and not to take into consideration their present value to the butcher.

d. To make the milking capacity and form of udder one of the chief points in awarding prizes to cows and heifers in Milk.

e. To draw the attention of the Stewards to any exhibit that has been improperly prepared for exhibition, or is wrongly entered.

f. To give in a "Reserve Number" in each Class, indicating the animal or exhibit which in their opinion possesses sufficient merit for the Prize, if the animal or exhibit to which the Prize is awarded should become disqualified. Should the "Reserved Number" succeed to a prize, and be itself disqualified, the prize will be forfeited.

g. Immediately after the Judging to deliver to the Stewards their signed awards stating the numbers to which the Prizes are adjudged, and noting all disqualifications.

77. Should any question arise upon which the Judges may desire a further opinion, the Stewards shall provide them with a Referee.

Payment of Prizes.

78. Cheques for the Prizes awarded (except where further qualification of an animal is required) will be drawn at the meeting of the Finance Committee held in July, 1912, and will then be forwarded by post to the Exhibitors to whom they have been awarded.

Interpretation of Conditions.

79. The Society reserves to itself by its Council the sole and absolute right to interpret these or any other prescribed conditions and regulations, or Prize Sheets, and to arbitrarily settle and determine all matters, questions or differences in regard thereto, or otherwise arising out of or connected with or incident to the Show. Also to refuse and to cancel any entries, disqualify Exhibitors, prohibit exhibition of entries, vary or cancel awards of prizes or reserved numbers, and relax conditions, as the Society may deem expedient.

POULTRY.

(Under Poultry Club Rules).

The Birds in Classes 1 *to* 20 *and* 23 *to* 51 *must have been hatched previous to January* 1, 1912.

Class	First Prize. £ s.	Second Prize. £ s.	Third Prize. £ s.
1.—**ANY DISTINCT BREED, except Bantams—Cock and 3 Hens, bred in 1910 or 1911, the property of one Exhibitor, mated for breeding**	3 0	2 0	1 0
2.—Cochin or Brahma—Cock	1 0	0 15	0 10
3.—Ditto—Hen	1 0	0 15	0 10
4.—Plymouth Rock—Cock	1 0	0 15	0 10
5.—Ditto—Hen	1 0	0 15	0 10
6.—Orpington (Buff)—Cock	1 0	0 15	0 10
7.—Ditto—Hen	1 0	0 15	0 10
8.—Orpington (Black)—Cock	1 0	0 15	0 10
9.—Ditto—Hen	1 0	0 15	0 10
10—Orpington (White)—Cock	1 0	0 15	0 10
11.—Ditto—Hen	1 0	0 15	0 10
12.—Minorca (Black)—Cock	1 0	0 15	0 10
13.—Ditto—Hen	1 0	0 15	0 10
14.—Minorca (White)—Cock or Hen	1 0	0 15	0 10
15.—Sussex—Cock	1 0	0 15	0 10
16.—Ditto—Hen	1 0	0 15	0 10
17.—Dorking (Any variety)—Cock	1 0	0 15	0 10
18.—Ditto—Hen	1 0	0 15	0 10
19.—Faverolles—Cock	1 0	0 15	0 10
20.—Ditto—Hen	1 0	0 15	0 10
21.—Cochin, Brahma, Plymouth Rock, Orpington, Langshan, Sussex or Dorking — Cockerel hatched in 1912	1 0	0 15	0 10
22.—Ditto—Pullets—ditto	1 0	0 15	0 10
23.—Langshan—Cock	1 0	0 15	0 10
24.—Ditto—Hen	1 0	0 15	0 10
25.—Wyandotte—(Silver or Gold Laced)—Cock	1 0	0 15	0 10
26.—Ditto—Hen	1 0	0 15	0 10
27.—Ditto (White)—Cock	1 0	0 15	0 10
28.—Ditto—Hen	1 0	0 15	0 10
29.—Ditto—(Black)—Cock	1 0	0 15	0 10
30.—Ditto—Hen	1 0	0 15	0 10
31.—Ditto—(Any other variety)—Cock	1 0	0 15	0 10
32.—Ditto—Hen	1 0	0 15	0 10
33.—Leghorn (White)—Cock	1 0	0 15	0 10
34.—Ditto—Hen	1 0	0 15	0 10
35.—Ditto—(Any other variety)—Cock	1 0	0 15	0 10
36.—Ditto—Hen	1 0	0 15	0 10
37.—Hamburg (Black)—Cock	1 0	0 15	0 10
38.—Ditto—Hen	1 0	0 15	0 10
39.—Ditto (Any other variety)—Cock	1 0	0 15	0 10
40.—Ditto—Hen	1 0	0 15	0 10

POULTRY—*continued.*

Class	First Prize. £	s.	Second Prize. £	s.	Third Prize. £	s.
41.—Old English Game (Black Red)—Cock	1	0	0	15	0	10
42.—Ditto—Hen	1	0	0	15	0	10
43.—Ditto (Any other variety)—Cock	1	0	0	15	0	10
44.—Ditto—Hen	1	0	0	15	0	10
45.—Indian Game—Cock	1	0	0	15	0	10
46.—Ditto—Hen	1	0	0	15	0	10
47.—French (excluding Faverolles)—Cock	1	0	0	15	0	10
48.—Ditto—Hen	1	0	0	15	0	10
49.—Any Other Distinct Breed (not previously mentioned)—Cock	1	0	0	15	0	10
50.—Ditto—Hen	1	0	0	15	0	10
51.—Cock and Hen, of any pure breed, best mated to produce Table Poultry	1	0	0	15	0	10
52.—Minorca, Ancona, Wyandotte, Leghorn, Hamburg, Faverolles or French — Cockerel hatched in 1912	1	0	0	15	0	10
53.—Ditto—Pullets—ditto	1	0	0	15	0	10
54.—Game, Malay or any other Distinct Breed not previously mentioned—Cockerel hatched in 1912	1	0	0	15	0	10
55.—Ditto—Pullets—ditto	1	0	0	15	0	10
LIVE TABLE POULTRY.						
56.—Pair of Cockerels of any Pure Breed, hatched in 1912	1	0	0	15	0	10
57.—Ditto—Pullets—ditto, ditto	1	0	0	15	0	10
58.—Pair of Cross-Bred Cockerels, hatched in 1912	1	0	0	15	0	10
59.—Ditto—Pullets—ditto	1	0	0	15	0	10
SELLING CLASSES.						
60.—Any Distinct Breed—Cock or Cockerel (*price not to exceed* £1 1s.)	1	0	0	15	0	10
61.—Any Distinct Breed—Hen or Pullet (*price not to exceed* £1 1s)	1	0	0	15	0	10

SPECIAL PRIZES.

(Offered by the Poultry Club, under conditions stated in year book of Club.

Challenge Cups value £10 10s. each.

A.—For the best Cock or Cockerel in the Poultry Classes, the property of a Member of the Poultry Club.

B.—Ditto—Hen or Pullet, ditto

POULTRY—*continued.*	First Prize. £ s.	Second Prize. £ s.	Third Prize. £ s.
SPECIAL PRIZES.			
Challenge Cups value £5 5s. each.			
C.—For the best Orpington, the property of a Member of the Poultry Club.			
D.—Ditto—Wyandotte, ditto			
E.—Ditto—Leghorn, ditto			
F.—Ditto—Plymouth Rock, ditto			
G.—Ditto—Minorca, ditto			
H.—Ditto—Langshan, ditto			
I.—Ditto—Sussex, ditto			
A Gold Medal for best Cock in the Poultry Classes, the Property of a Member of the Poultry Club.			
Ditto—Hen, ditto			
Ditto—Cockerel, ditto			
Ditto—Pullet, ditto			
A Silver Challenge Cup, value £10 10s., for the best Bird exhibited in the Poultry Section, the property of a Member of the Poultry Club.			
DUCKS, GEESE & TURKEYS.			
CLASS			
62.—DRAKE or DUCK (Aylesbury)	1 0	0 15	0 10
63.— " " (Rouen)	1 0	0 15	0 10
64.— " " (Pekin)	1 0	0 15	0 10
65.—GANDER or GOOSE	1 0	0 15	0 10
66.—TURKEY—Cock or Hen	1 0	0 15	0 10
DEAD TABLE POULTRY.			
(*To be forwarded alive, and to be killed and plucked by a Poulterer acting for the Society. See Regulation* 12 *on Entry Form.*)			
67.—Pair of Cockerels of 1912 of any Pure Breed	1 0	0 15	0 10
68.—Ditto—Pullets—ditto	1 0	0 15	0 10
69.—Pair of Cross-Bred Cockerels of 1912	1 0	0 15	0 10
70.—Ditto—Pullets—ditto	1 0	0 15	0 10
71.—Pair of Ducklings of 1912	1 0	0 15	0 10

POULTRY.

(Under Poultry Club Rules.)

CONDITIONS AND REGULATIONS.

Charges, &c.

1. Exhibitors may make an unlimited number of Entries on payment of fees as follows:—

MEMBERS.	NON MEMBERS.
s. d.	*s. d.*
2 0	3 0

The above fees include coops, food, and attendance.

N.B.—The above fees *must* be sent with the entries, or no notice will be taken of the latter.

2. The privilege of entering at Members' fees is strictly limited to Members of the Bath and West Society, or of the Somerset County Agricultural Association elected on or before January 30, 1912, and subscribing not less than £1 annually.

3. All entries must be made on the printed forms to be obtained of the Secretary (Thos. F. Plowman, 3, Pierrepont Street, Bath), and such forms must be correctly filled up and returned to the Secretary, together with all fees due on or before April 27. Exhibitors are requested to carefully examine the List of Prizes and Conditions, as the Society cannot be responsible for any errors made by Exhibitors in the entry forms, and birds entered in a wrong class will be necessarily excluded from competition. No alterations can be made in entry forms after they have been received by the Secretary.

4. The Council reserve the right to refuse the entries of any person.

5. Exhibitors must state the price and breed of their birds on their entry forms

Show Yard.

6. All birds must be in the Show Yard by 6 p.m. *on Tuesday, May* 21, and no bird can be removed before 7 p.m. on Monday, May 27. Any Exhibitors who send for their birds must do so between 7 and 8 p m. on that day.

7. All carriage must be prepaid to Bath Railway Station, otherwise the birds will not be received at the Exhibition; but they will be conveyed free of expense from the Station to the Show Yard and back.

8. No Exhibitor or Servant will be allowed into the tent until the birds have been judged.

9. The Poultry Tent will not be open to the public until 2 o'clock on the first day of the Exhibition.

10. A Non-Transferable Admission Ticket for the Exhibition will be sent to each Exhibitor whose entry fees amount to £1 and upwards.

Table Poultry.

11. In these Classes (56 to 59 and 67 to 71) quality for the table will be considered before mere weight. The date of hatching must be given, and, in the case of cross-bred birds, the breeds of the parents.

12. In Classes 67 to 71 the whole of the Birds will be first exhibited alive. They will all be killed on the evening of Wednesday, May 22, and trussed by a qualified Poulterer, the prizes being finally awarded to the dead birds. These will then all be exhibited, but will be withdrawn from exhibition when considered necessary, and, if unsold, will be returned to Exhibitors after 6 p.m. on Friday, May 24. Exhibitors are recommended to put a reasonable price upon their exhibits in these Classes so as to promote the sale of them.

Sales.

13. All birds may be claimed at the price put upon them, any time after 4 o'clock on Wednesday, May 22, and a sale *must take place* if the price stated be paid to the Clerk in the Poultry Office at the time of claiming. *No alteration can be made in the prices stated on the entry forms* and in the Catalogue until after Friday, May 24, when the price may be reduced on payment to the Stewards of one shilling per pen on each alteration. Birds must be *sold in pens*, and the price stated must include the basket. A charge of 10 per cent. will be made for all birds sold. The persons who have the management of the sales cannot take charge of birds which are disposed of privately.

14. No second prize will be given in any of the Classes unless there are three entries, and no third prize unless there are six entries.

DISQUALIFICATION.

15. The Judges are empowered to withhold a prize or prizes where birds are not considered of sufficient merit, or in the Chicken Classes where they consider them over age, and are instructed to disqualify any that have been clipped, drawn, trimmed, marked, or dyed. In the Game Classes birds can be shown either dubbed or undubbed.

16. An Exhibitor detected in a false statement as to the age, &c., of any bird, or in any other practice calculated to deceive or mislead the Judges or Stewards, shall forfeit all or any prizes awarded to him or her at the Show, and will be disqualified from competing at any future Show of the Society, and the Council shall have the power to inform other Societies of their action in this respect.

17. No person who shall have been shown to the satisfaction of the Council to have been excluded from exhibiting for Prizes at the exhibition of any other Society in consequence of having attempted to obtain a Prize by giving a false Certificate, or by other unfair means, and no person who is under exclusion from any Breed Society for fraudulent practices, shall be allowed to exhibit at this or any other meeting of the Society.

18. Unhealthy birds will not be exhibited, but will be immediately returned to their owners, and the fees will be forfeited.

PROTESTS.

19. In order to check frivolous and vexatious protests, no protest will be entertained unless accompanied by a deposit of £1 in each case; and in case the protest is not substantiated the deposit may be forfeited to the funds of the Society. All protests must be made before 12 o'clock (noon) on Thursday, May 23.

FORFEITS.

20. Persons entering birds and failing to send the same to the Exhibition will forfeit the entrance fee for each pen so left vacant.

GENERAL.

21. All birds shown must be *bona fide* the property of the Exhibitor.

22. For each pen entered the Exhibitor will receive a label, on the reverse side of which he must legibly write his name and address for the return journey.

23. All eggs laid at the Exhibition will be destroyed.

24. The Stewards pledge themselves to take every care of the birds exhibited, but neither they nor the Society will, in any case, be responsible for any accident, loss, or damage, from whatever cause arising, the exhibits being entered at the sole risk of the Exhibitors, and Exhibitors will be required to hold the Society harmless in the event of loss.

25. In case of death of any bird during the Exhibition, it will be sent back for the inspection of the Exhibitor.

26. The following are the conditions under which the Challenge Cups are offered by the Poultry Club:—

> *There shall be no limit as to how many times these Cups are competed for in any one year; they may be competed for at any number of Shows on one and the same day, but in every case the winners shall receive a suitable Certificate recording the win, and the names shall be engraved on the cup or cups. A cup that has been won 8 times by the same Exhibitor, who must be a Member of the Poultry Club, shall become his absolute property.*

27. The Poultry Department is subject to the Rules and Regulations of the Society, and its Officers.

*** *The use of properly constructed Poultry Baskets will facilitate the safe and speedy conveyance of the birds to and from the Exhibition.*

The Society cannot, under any circumstances, undertake to send telegrams to Exhibitors as to Judges' awards.

Applications for Catalogues (price 1s. each) and printed lists of awards should be made only to the Publishers, Messrs. WILLIAM LEWIS AND SON, *Herald Office, Bath.*

By order of the Council,

3, Pierrepont Street, Bath. **THOMAS F. PLOWMAN**, *Secretary.*

TELEGRAPHIC ADDRESS:—"PLOWMAN, BATH."

TELEPHONE No 619.

FINANCIAL STATEMENTS

FOR

1911

WITH ITEMS OF 1910 *FOR COMPARISON.*

The Bath and West and

SUMMARY OF THE CASH ACCOUNT

WITH COMPARATIVE

Dr.

Page of accompanying Cash Account.	RECEIPTS.		1911. Cardiff.		1910. Rochester.
		£ s. d.	£ s. d.	£ s. d.	£ s. d.
	General:—				
cxlviii	Dividends and Interest		596 15 11		662 5 1
cxlviii	Subscriptions from Members		1,035 7 0		995 14 0
cxlviii	Life Compositions		40 0 0		10 0 0
cxlviii	Journal		40 14 5		42 7 4
				1,712 17 4	1,710 6 5
	Show:—				
cxlviii	Implements		2,006 18 8		1,549 6 4
cl	Horses	813 14 6			381 6 3
cl	Cattle, Sheep and Pigs	908 2 0			922 0 0
cl	Catalogues, &c.	105 19 8			83 10 1
			1,827 16 2		1,386 16 4
cl	Poultry		72 14 0		80 10 7
clii	Shoeing		69 15 0		30 10 0
clii	Timbering and Splicing		15 5 0		
clii	Art Manufactures		81 10 0		
cliv	Cheese and Butter		87 9 6		50 2 9
cliv	Working Dairy		193 2 9		75 5 3
cliv	Cider		19 15 0		7 2 6
cliv	Hops, Wool, &c.				84 5 0
clvi	Admissions		3,965 4 0		1,698 11 0
clvi	Unapportionable:—				
	Contract Premiums	560 10 0			522 11 0
	Sales and Fittings	414 5 2			321 17 0
			974 15 2		844 8 0
clvi	Subscription from Bath for 1912 Show		800 0 0		800 0 0
				10,114 5 3	6,606 17 9
clviii	**Experiments:—**				25 0 0
				11,827 2 7	8,342 4 2
	Canada Stock redeemed				1,790 13 4
	Balance in Bank, January 1st				1,291 19 11
	Balance due to Bank December 31st				29 5 2
			£	11,827 2 7	11,454 2 7

Southern Counties Society.

FOR THE YEAR ENDING DEC. 31st, 1911.

STATEMENT FOR 1910. Cr.

Page of accompanying Cash Account.	PAYMENTS.	£ s. d.	1911. Cardiff. £ s. d.	£ s. d.	1910. Rochester. £ s. d.
	General:—				
cxlix	Salaries		1,110 10 0		1,110 10 0
cxlix	Printing, Postage, Stationery, &c.		244 12 4		368 2 11
cxlix	Journal		418 17 8		409 17 5
				1,774 0 0	1,888 10 4
	Show:—				
cxlix	Implements		641 8 9		585 16 11
cli	Horses	1,071 13 4			795 16 9
cli	Cattle, Sheep, and Pigs	2,359 7 8			2,437 3 10
cli	Fodder, &c.	570 16 11			518 16 9
			4,001 17 11		3,751 17 4
cli	Poultry		232 18 6		289 19 1
cliii	Shoeing		149 1 3		132 3 10
cliii	Timbering and Splicing		22 14 1		
cliii	Art Manufactures		61 4 5		1 10 0
cliii	Nature Study		36 9 11		49 13 0
cliii	Forestry		62 12 10		82 10 9
cliii	Music		165 11 9		152 7 8
cliii	Horticulture		146 7 1		201 10 4
clv	Bees		10 0 0		10 0 0
clv	Cheese and Butter		236 1 4		203 9 4
clv	Working Dairy		465 6 5		480 8 7
clv	Cider		97 16 9		109 11 4
clv	Hops and Wool				110 18 0
clvii	Public Announcements		442 10 2		391 19 5
clvii	Unapportionable:—				
	Erection of Offices, &c.	1,133 2 3			1,114 19 4
	Carriage of Plant	87 4 1			177 17 0
	Stand Fittings	211 1 11			184 0 0
	Police	92 15 0			141 9 3
	Miscellaneous	303 7 10			279 0 4
			1,827 11 1		1,897 5 11
				8,599 12 3	8,451 1 6
lvix	**Experiments:—**			103 8 0	114 10 9
				10,477 0 3	10,454 2 7
	Deposit				1,000 0 0
	Balance due to Bank, January 1st			29 5 2	
	Balance in Bank, Dec. 31st.			1,320 17 2	
			£	11,827 2 7	11,454 2 7

January 13th, 1912.
Audited and found correct,
F. CLIFFORD GOODMAN, F.C.A.,
Auditor.

Passed by Council,
January 30th, 1912.
THOS. F. PLOWMAN,
Secretary.

The Bath and West and

Dr. CASH ACCOUNT FOR THE YEAR ENDING DEC. 31st,

RECEIPTS.	1911. Cardiff. £ s. d.	£ s. d.	1910. Rochester. £ s. d.
DIVIDENDS AND INTEREST :—			
Consols	137 10 4		137 10 4
New Zealand Stock	51 13 6		51 13 6
India Stock	212 19 4		212 19 4
Queensland Stock	103 12 8		103 12 8
New South Wales Stock	66 0 2		66 0 2
Interest on Deposit	24 19 11		23 0 2
Canada Stock			67 8 11
		596 15 11	662 5 1
SUBSCRIPTIONS FROM MEMBERS :—			
Arrears	31 16 0		12 12 0
Governors	179 7 0		179 6 0
Subscribers of £1 and upwards	816 4 0		794 16 0
Ditto of 10s.	8 0 0		9 0 0
		1,035 7 0	995 14 0
LIFE COMPOSITIONS		40 0 0	10 0 0
JOURNAL :—			
Sales	6 17 9		10 12 10
Advertisements	33 16 8		31 14 6
		40 14 5	42 7 4
IMPLEMENTS :—			
Fees for Space :—			
Machinery-in-Motion Shedding	520 15 0		358 15 0
Ordinary "	336 18 0		259 10 0
Miscellaneous "	218 10 0		135 17 0
Boarded "	395 12 6		441 1 0
Seed "	27 0 0		49 0 0
Uncovered Ground	326 1 6		160 18 4
Catalogue Fees	97 11 8		73 14 6
Entry Fees	84 10 0		70 10 0
		2 006 18 8	1,549 6 4
Carried forward		£ 3,719 16 0	

Southern Counties Society.

1911, WITH COMPARATIVE STATEMENT FOR 1910. Cr.

PAYMENTS.	1911. Cardiff.						1910. Rochester.		
	£	s.	d.	£	s.	d.	£	s.	d.
SALARIES :—									
Secretary (including Clerks, Show Expenses, &c.)	1,050	0	0				1,050	0	0
Auditor	20	0	0				20	0	0
Consulting Chemist	30	0	0				30	0	0
,, Botanist	10	10	0				10	10	0
				1,110	10	0	1,110	10	0
MISCELLANEOUS :—									
Printing	29	3	11				31	19	0
Stationery and Finance Books	36	14	7				41	14	4
Postages, Telegrams, Cheque and Receipt Stamps	65	7	8				62	19	4
Ground Rent and Rates	21	5	0				20	5	2
Income and Property Tax	2	8	9				2	3	9
Travelling Expenses	25	6	11				26	0	4
Carriage of Goods	10	19	3				13	4	9
Directories and Reference Books	0	19	6				5	18	4
Subscriptions	6	6	0				5	5	0
Repairs and Fittings	11	1	1				6	5	4
Hire of London Rooms for Meetings	4	4	0				6	6	0
Fuel and Light	8	5	2				10	7	0
Finance Committee's Expenses	6	7	0				5	7	0
Transfer of Stock to New Trustees	8	6	8				19	16	1
Telephone	8	1	10				10	11	6
Grant to late Superintendent of Works							100	0	0
				244	12	4	368	2	11
JOURNAL :—									
Editor	100	0	0				100	0	0
Associate Editor	100	0	0				100	0	0
Printing and Binding	147	11	7				134	15	10
Plans and Blocks	6	7	0				8	0	6
Journal Distribution	18	13	7				18	9	1
Postages, Stationery, Reference Books, &c.	4	4	0				4	9	0
Payments to Authors	42	1	6				44	3	0
				418	17	8	409	17	5
IMPLEMENTS :—									
Shedding	538	18	5				492	9	1
Stewards and Assistants	67	10	2				53	11	1
Printing, Stationery, &c.	32	2	8				37	1	9
Fees returned	2	17	6				2	15	0
				641	8	9	585	16	11
Carried forward . £				2,415	8	9			

Dr.

CASH ACCOUNT—*continued.*

RECEIPTS.				1911. Cardiff.		1910. Rochester.
	£ s. d.		£ s. d.	£ s. d.		£ s. d.
Brought forward				3,719 16 0		
HORSES, CATTLE, SHEEP AND PIGS:—						
Horses:—Entry Fees	231 10 0					156 15 0
Fines	3 0 0					2 10 0
Grand Stand Admissions	417 4 6					202 1 3
Special Prizes	162 0 0					20 0 0
			813 14 6			381 6 3
Cattle, Sheep and Pigs:—						
Entry Fees	529 2 0					568 0 0
Fines	33 0 0					22 10 0
Special Prizes	346 0 0					331 10 0
			908 2 0			922 0 0
Catalogues, Manure and Fodder			105 19 8			83 10 1
				1,827 16 2		1,386 16 4
POULTRY:—						
Entry Fees			71 19 0			80 6 0
Commission on Sales			0 15 0			0 4 7
				72 14 0		80 10 7
Carried forward			£	5,620 6 2		

CASH ACCOUNT—*continued.* Cr.

PAYMENTS.	£ s. d.	1911. Cardiff. £ s. d.	1911. Cardiff. £ s. d.	1910. Rochester. £ s. d.
Brought forward .			2,415 8 9	
HORSES, CATTLE, SHEEP AND PIGS:—				
Horses—Prizes .	804 18 0			556 0 0
Shedding & Grand Stand	176 2 0			153 8 10
Stewards and Assistants	49 5 1			55 8 2
Judges . . .	40 18 3			30 19 9
Fees returned . .	0 10 0			
		1,071 13 4		795 16 9
Cattle—Prizes £1,148 12 0				
Less Deferred 5 0 0	1,143 12 0			1,055 0 0
Sheep—Prizes . . .	474 3 0			480 0 0
Pigs—Prizes . . .	195 16 0			210 10 0
Shedding and Canvas	349 11 10			511 0 7
Stewards and Assistants	87 13 10			34 12 8
Judges . . .	153 11 0			145 0 7
Fees Returned	5 0 0			1 0 0
		2,359 7 8		2,437 3 10
Buildings, etc.	260 17 9			260 0 0
Fodder and Insurance .	172 18 0			143 2 5
Fodder Assistants . .	7 9 10			7 6 8
Veterinary Inspector . .	26 12 6			23 16 6
Rosettes	12 4 4			9 19 2
Printing and Stationery .	76 16 7			64 15 7
Refreshments for Judges .	13 17 11			9 16 5
		570 16 11		518 16 9
			4,001 17 11	3,751 17 4
POULTRY:—				
Marquee, Staging and Shed		37 9 6		80 19 6
Steward and Assistants		24 6 7		27 5 5
Judges		14 6 0		15 0 0
Prizes		146 16 1		152 6 0
Printing, Stationery, Cartage, &c. . .		10 0 4		14 8 2
			232 18 6	289 19 1
Carried forward		£	6,650 5 2	

Dr. CASH ACCOUNT—*continued.*

RECEIPTS.	1911. Cardiff.		1910. Rochester.
	£ s. d.	£ s. d.	£ s. d.
Brought forward .		5,620 6 2	
SHOEING :—			
Entry Fees	48 15 0		30 10 0
Local Prizes	21 0 0		
		69 15 0	30 10 0
TIMBERING AND SPLICING :— . .			
Entry Fees	3 5 0		
Local Prizes	12 0 0		
		15 5 0	
ART-MANUFACTURES :—			
Fees for Space		81 10 0	
Carried forward .		£ 5,786 16 2	

CASH ACCOUNT—*continued*. Cr.

PAYMENTS.	1911 Cardiff. £ s. d.	£ s. d.	1910. Rochester. £ s. d.
Brought forward		6,650 5 2	
SHOEING :—			
Prizes	59 14 6		30 0 0
Judges	11 0 0		10 4 4
Anvils, Forges, Coals, Horses, Printing, etc.	18 17 4		11 19 9
Shedding	26 8 1		53 3 7
Steward and Assistants	9 18 10		11 16 0
Fees returned	23 2 6		15 0 2
		149 1 3	132 3 10
TIMBERING AND SPLICING :—			
Prizes	12 0 0		
Judges	5 10 0		
Timber, Rope, Printing, &c	5 4 1		
		22 14 1	
ART-MANUFACTURES :—			
Labour and Fittings	50 8 10		
Steward and Assistants, Printing, etc.	5 7 7		1 10 0
Fees returned	5 8 0		
		61 4 5	1 10 0
NATURE STUDY :—			
Labour and Fittings	22 17 11		34 0 7
Steward and Assistants	6 4 0		7 7 11
Printing, Postage, etc.	7 8 0		8 4 6
		36 9 11	49 13 0
FORESTRY :—			
Labour and Fittings	32 16 1		49 0 8
Steward and Assistants	6 0 0		7 12 6
Printing, Postages, etc.	6 18 9		8 2 3
Prizes	6 17 0		10 0 10
Judges and Demonstrators	10 1 0		7 14 6
		62 12 10	82 10 9
MUSIC :—			
Bands and their Fares	139 0 0		113 0 0
Steward and Assistants	3 14 6		4 10 11
Erecting Band Stand, etc.	22 17 3		34 16 9
		165 11 9	152 7 8
HORTICULTURE :—			
Gratuities to Gardeners	100 0 0		100 0 0
Erecting and Repairing Tent and Staging	28 1 11		84 0 0
Steward and Assistants	18 5 2		17 10 4
		146 7 1	201 10 4
Carried forward		£7,294 6 6	

Dr.

CASH ACCOUNT—*continued.*

RECEIPTS.	£ s. d.	1911. CARDIFF. £ s. d.	1911. CARDIFF. £ s. d.	1910. ROCHESTER. £ s. d.
Brought forward			5,786 16 2	
CHEESE AND BUTTER:—				
Entry Fees		52 9 6		38 15 0
Sales		14 10 0		10 12 9
Fines, &c.		0 10 0		0 15 0
Special Prizes		20 0 0		
			87 9 6	50 2 9
WORKING DAIRY:—				
Admissions		8 10 6		2 4 9
Entry Fees, Competitions	67 15 0			21 2 6
„ Dairy Appliances	7 16 0			8 8 0
„ Butter and Milk Tests	20 0 0			27 0 0
		95 11 0		56 10 6
Sale Premium and Sundries		35 6 3		16 10 0
Special Prizes		53 15 0		
			193 2 9	75 5 3
CIDER:—				
Entry Fees and Fines		12 5 0		7 2 6
Special Prizes		7 10 0		
			19 15 0	
HOPS, WOOL, &c.:—				84 5 0
Carried forward			£ 6,087 3 5	

CASH ACCOUNT—*continued*. Cr.

PAYMENTS.	1911. Cardiff. £	s.	d.	£	s.	d.	1910. Rochester. £	s.	d.
Brought forward .				7,294	6	6			
BEES:—									
Glamorgan Beekeepers' Association . .				10	0	0	10	0	0
CHEESE AND BUTTER.—									
Judges	12	1	0				11	7	10
Prizes	162	10	0				134	0	0
Stewards and Assistants	6	0	6				13	13	0
Shedding	43	8	6				35	8	9
Printing, Stationery, Carriage, &c. . .	7	1	4				3	19	9
Grass Table for Butter . . .	5	0	0				5	0	0
				236	1	4	203	9	4
WORKING DAIRY:—									
Stewards and Assistants	46	19	6				55	10	7
Judges and Demonstrators	73	17	7				69	14	0
Buildings	167	1	1				245	10	0
Printing, Stationery, Postage and Insurance	12	16	11				8	7	6
Utensils, Plant, Carriage, Milk and Churners for Tests, &c..	41	3	11				36	1	11
Prizes	102	10	0				51	3	0
Coal, Salt, Ice, &c.	7	13	1				4	3	2
Consulting Chemist for Analyses . . .	8	4	4				9	18	5
Cows for Milking	5	0	0						
				465	6	5	480	8	7
CIDER:—									
Shedding and Fittings	20	1	7				47	0	5
Steward and Assistants	19	8	4				17	12	10
Judge	5	18	0				7	14	6
Prizes	27	16	0				21	6	4
Printing, &c.	5	8	10				5	1	3
Analyses, Carriage, &c.	19	4	0				10	16	0
				97	16	9	109	11	4
HOPS, WOOL, &c.:—							110	18	0
Carried forward .			£	8,103	11	0			

Dr. CASH ACCOUNT—*continued.*

RECEIPTS.	1911. Cardiff. £ s. d.	£ s. d.	1910. Rochester. £ s. d.
Brought forward		6,087 3 5	
ADMISSIONS TO SHOW-YARD:—			
Admissions at 2*s.* 6*d.*	1,910 12 6		659 2 6
„ „ 1*s.*	1,920 13 0		890 15 0
„ „ 6*d.*	73 11 0		67 6 0
Season Tickets, etc.	60 7 6		81 7 6
		3,965 4 0	1,698 11 0
SHOW (UNAPPORTIONABLE) —			
Sales and Fittings	414 5 2		321 17 0
Contract Premiums	560 10 0		522 11 0
		974 15 2	844 8 0
SUBSCRIPTIONS FROM TOWNS:—			
Bath, for 1912 Show		800 0 0	800 0 0
Carried forward		£11,827 2 7	

CASH ACCOUNT—*continued.* Cr.

PAYMENTS.	1911. Cardiff. £	s.	d.	£	s.	d.	1910. Rochester. £	s.	d.
Brought forward				8,103	11	0			
PUBLIC ANNOUNCEMENTS:—									
Advertising	209	12	11				166	0	3
Billposting	123	8	1				131	0	0
Railway Placards	62	5	0				40	15	0
Printing	47	4	2				54	4	2
				442	10	2	391	19	5
SHOW (UNAPPORTIONABLE):—									
Official Buildings, &c.	961	1	4				889	19	4
Hoarding	172	0	11				225	0	0
Carriage of Plant	87	4	1				177	17	0
Works Assistant	7	14	6				9	3	8
Stand Fittings	211	1	11				184	0	0
Insurance	5	11	6				11	1	3
Furnishing Official Buildings	24	6	2				22	13	4
Mess Room, Allotment Expenses, &c.	34	2	8				20	15	3
Gatekeepers, Yardmen, Messengers, &c.	95	14	10				102	4	0
Stewards of Finance and Treasurer	24	10	6				20	11	10
Finance Office and Treasurer's Clerks	34	19	0				34	11	6
Police	92	15	0				141	9	3
Badges, &c.	5	7	0				3	0	2
Catalogues for Press and Officials	7	3	0				6	10	0
Purchase of Plant	20	1	7				1	16	0
Printing, Stationery, &c.	37	10	7				30	13	4
Extension of Telegraph Wires	6	6	6				16	0	0
				1,827	11	1	1,897	5	11
Carried forward			£	10,373	12	3			

Dr. CASH ACCOUNT—*continued.*

RECEIPTS.	1911. Cardiff. £	s.	d.	£	s.	d.	1910. Rochester. £	s.	d.
Brought forward .				11,827	2	7			
EXPERIMENTS :—									
MANURES AND MUTTON . . .							25	0	0
				11,827	2	7	8,342	4	2
Canadian Stock Redeemed . . .							1,790	13	4
Balance in Bank, Jan. 1st . .							1,291	19	11
Balance due to Bank, Dec. 31st . .							29	5	2
			£	11,827	2	7	11,454	2	7

CASH ACCOUNT—*continued*. Cr.

PAYMENTS.	1911. Cardiff.						1910. Rochester.		
	£	s.	d.	£	s.	d.	£	s.	d.
Brought forward .				10,373	12	3			
EXPERIMENTS :—									
Manures and Mutton	3	8	0				14	10	9
Cider Institute	100	0	0				100	0	0
				103	8	0	114	10	9
				10,477	0	3	10,454	2	7
Deposit Account							1,000	0	0
Balance due to Bank, Jan. 1st .				29	5	2			
Balance in Bank, Dec. 31st . .				1,320	17	2			
				£ 11,827	2	7	11,454	2	7

Jan. 13*th* 1912.

I hereby certify that I have examined the foregoing accounts for the year ending December 31st, 1911, compared the payments entered with the vouchers, and found them all in order and correct.

F. CLIFFORD GOODMAN, F.C.A.,
Auditor.

Passed by Council,
Jan. 30, 1912,
THOS. F. PLOWMAN,
Secretary.

ASSETS AND LIABILITIES ACCOUNT TO DECEMBER 31ST, 1911, WITH COMPARISON FOR 1910.

ASSETS.	Actual Cost £ s. d.	Market Value on Dec. 31. £ s. d.	1911. Cardiff £ s. d.	1910. Rochester. £ s. d.
INVESTMENTS			16,631 0 6	17,007 8 5
New Zealand Stock	1,500 0 0	1,513 2 5		
Consols .	5,809 19 6	4,505 11 3		
India " .	7,277 5 1	5,993 6 2		
Queensland " .	3,000 0 0	2,778 19 3		
N. S. Wales " .	2,000 0 0	1,840 1 5		
	19,587 4 7	16,631 0 6		
CASH ON DEPOSIT			1,000 0 0	1,000 0 0
PLANT:—				
Works		269 4 0		279 0 8
Dairy		25 17 6		28 15 0
			295 1 6	307 15 8
HOUSE PROPERTY . .		633 10 7		633 10 7
FURNITURE AND FITTINGS		179 9 1		184 1 1
			812 19 8	817 11 8
SUBSCRIPTION ARREARS			71 7 0	96 6 0
			18,810 8 8	19,229 1 9
BALANCE IN BANK			1,320 17 2	
			£ 20,131 5 10	19,229 1 9

LIABILITIES.	1911. Cardiff. £ s. d.	1910. Rochester. £ s. d.
DEFERRED PRIZES	5 0 0	5 0 0
BATH MEETING	800 0 0	800 0 0
JOURNAL, cost of, estimated at . . .	450 0 0	450 0 0
	1,255 0 0	1,255 0 0
BALANCE DUE TO BANK DECEMBER 31ST		29 5 2
BALANCE	18,876 5 10	17,944 16 7
	£ 20,131 5 10	19,229 1 9

January 13th, 1912.
Audited and found correct,
F. CLIFFORD GOODMAN, F.C.A., Auditor.

Passed by Council,
January 30th, 1912.
THOS. F. PLOWMAN, Secretary.

Bath and West and Southern Counties Society.

STATEMENT SHOWING FINANCIAL RESULT OF THE CARDIFF (1911) SHOW.

Printed Financial Statements. Page		£ s. d.	£ s. d.	£ s. d.
cxlvi	Show Receipts			10,114 5 3
cxlvii	Show Payments		8,599 12 3	
clx	Deferred Prizes		5 0 0	
			8,604 12 3	
clvii	Less Show Plant purchased . .	20 1 7		
	Less 10 per cent. for depreciation .	2 0 0		
			18 1 7	
				8,586 10 8
	Net profit . .			£1,527 14

Bath and West and Southern Counties Society,

FOR THE

Encouragement of Agriculture, Arts, Manufactures and Commerce.

List of Members, 1912.

PATRON.

HIS MOST GRACIOUS MAJESTY THE KING.

PRESIDENT

FOR 1911-1912.

THE MOST HON. THE MARQUIS OF BATH.

Names thus (*) distinguished are Governors.
Names thus (†) distinguished are Life Members.
*** *Members are particularly requested to make the Secretary acquainted with any errors in the names of residences.*

Name.	Residence.	£	s.	d.
†*His Most Gracious Majesty the King	Windsor Castle	..		
†Ackers, B. St. John	Huntley Manor, Huntley, near Gloucester	..		
Ackers, Chas.	Huntley Manor, Gloucester	1	0	0
Ackland, J.	Cutton Farm, Poltimore, Exeter	1	0	0
Acland, Alfred Dyke	. . . .	1	0	0
†Acland, Rt. Hon. A. H. Dyke	29, St. James Court, Buckingham Gate, London, S.W.	..		
*Acland, Sir C. T. D., Bart.	Killerton, Exeter	5	0	0
Acland, F. Dyke, M.P.	Colby Hall, Askrigg, Yorks	1	0	0
Adams, G. & Son	Wadley House, Faringdon, Berks	1	0	0
Adams, R. and H. (Ld.)	10, Queen Square, Bristol	1	0	0
*Addington, Hon. G.	Upottery Manor, Honiton	2	0	0
Adeane, C. R. W.	Babraham, Cambridge	1	0	0
†Aitken, G. H.	Longleat Estate Office, Warminster	..		
Akers, E.	St. Fagans, Cardiff	1	0	0
Alexander, D.	5, High Street, Cardiff	1	1	0

Name.	Residence.	Subscriptions. £	s.	d.
Alexander, H. G.	Dinas Powis, Cardiff	1	1	0
Allen, A.	Stoney Stratton, Evercreech, Bath	1	0	0
†Allen, James D.	Springfield House, Shepton Mallet	..		
Allen, W. T.	West Bradley, Glastonbury	1	0	0
Allin, Mrs. N.	Townsend Manor Farm, Over Wallop, Stockbridge	1	0	0
Allix, C. I. L.	St. Germans, Cornwall	1	0	0
Allsebrook A.	Link Elm, Malvern Link	1	1	0
Ames, F.	Hawford Lodge, Worcester	1	0	0
Andrews, S. Fox	Union Street, Bath	1	0	0
Anglo-Bavarian Brewery Company	Shepton Mallet	1	0	0
Anglo-Continental Guano Works	15, Leadenhall Street, London, E.C.	1	0	0
Anglo-Swiss Condensed Milk Company	Chippenham	1	0	0
†Ashcomb, Lord	Denbies, Dorking	..		
†Ashcroft, W.	13, The Waldrons, Croydon	..		
Ashford, E. C., M.D.	The Moorlands, Bath	1	0	0
*Astor, Waldorf	Clivedon, Taplow, Bucks	2	0	0
Augustein, J. R.	Holbrook House, Wincanton	1	0	0
†Avebury, Lord	High Elms, Hayes, Kent	..		
†Aveling, Thomas L.	Rochester	..		
Avon Manure Company (Ld.)	St. Philip's Marsh, Bristol	1	0	0
Awdry, C.	. . . .	1	0	0
Badcock, H. Jefferies	Taunton	1	0	0
Bailey W.	Hinton Farm, Hinton Charterhouse, Bath	1	0	0
Bailward, F. H. M.	Horsington, Wincanton	1	1	0
Bainbridge, Mrs. R. C.	Elfordleigh, Plympton, South Devon	1	0	0
Baker, G. E. Lloyd	Hardwicke Court, nr. Gloucester	1	0	0
†Baker, M. G. Lloyd	The Cottage, Hardwicke, Glos.	..		
†Baker, L. J.	10, Ennismore Gardens, London, S.W.	..		
Baker, G.	The Green, Raglan, Mon.	1	0	0
*Balston, W. E.	Barvin, Potters Bar, Herts	2	0	0
Bamford, H. and Sons	Uttoxeter	1	0	0
*Bannatyne, J. F.	Haldon, Exeter	2	2	0
Barford and Perkins	Peterborough	1	0	0
Barham, G. T.	Sudbury Park, Wembley, Middlesex	1	0	0
Baring, Hon. A. H.	The Grange, Alresford, Hants	1	0	0
Barker, Sir J., Bart.	The Grange, Bishops Stortford	1	0	0
Barlow, Sir J. Emmott, Bart., M.P.	Torkington Lodge, Hazel Grove, near Stockport	1	0	0

Name.	Residence.	£	s.	d.
Barrett, Major William	Moreden, North Curry, Taunton	1	0	0
Barrett, Col. W.	Moreden, Taunton	1	0	0
Barstow, J. J. J.	The Lodge, Weston-super-Mare	1	1	0
Barton, D. J.	Quinceboro' Farm, Widemouth Bay, Bude, N. Cornwall	0	10	0
Bassett, A. F.	Tehidy, Camborne, Cornwall	1	0	0
*†Bath, Marquis of	Longleat, Warminster		..	
Bath and Somersetshire Dairy Co.	Bath	1	0	0
Bath and Wells, The Bishop of	The Palace, Wells	1	1	0
Bath Gas Company	Bath	1	0	0
†Bathurst, C., M.P.	Lydney Park, Glos.		..	
Batten, Col. Cary	Abbotsleigh, Bristol	1	0	0
Batten-Pooll, R. H.	Road Manor, Bath	1	0	0
†Battishill, W. J.	Spreyton, Exeter		..	
†Baxendale, J. Noel	. . . .		..	
Bayldon E. H.	Oaklands, Dawlish	1	0	0
Bayley, J.	Highlands, Ivybridge, S. Devon	1	0	0
Beauchamp, E. B.	Trevince, Redruth	1	0	0
Beauchamp, F. B.	Woodborough House, Peasedown St. John, Bath	1	1	0
*Beaufort, Duke of	Badminton, Chippenham	2	2	0
Beaufoy, M. H.	Coombe Priory, Shaftesbury	1	0	0
Benjafield, A.	Oak Vale, Hensbridge, Blandford	1	0	0
Bennett, Brothers	*Journal* Office, Salisbury	1	1	0
Bennett R. A.	Thornbury, Glos.	1	0	0
Bennetts, J. M.	Killaganoon, St. Feock, Cornwall	1	1	0
Bentall, Edward H. & Co.	Heybridge, Maldon, Essex	1	0	0
Benyon, H. A.	Englefield House, Reading	1	1	0
*Benyon, J. Herbert	Englefield House, Reading	5	0	0
Berryman, F. H.	Field House, Shepton Mallet	1	1	0
Best, Capt. T. G.	Redrice, Andover	1	0	0
†Best, Capt. W.	Vivod, Llangollen, North Wales		..	
Beynon, J. W.	16, Mount Stuart Square, Cardiff	1	1	0
Bigg, Thomas	Leicester House, Great Dover Street, London, E.C.	1	0	0
Birmingham, C.	Holnicote, near Minehead	0	10	0
†Blackburn, H. P.	Donhead Hall, Salisbury		..	
Blackstone & Co. (Ltd.)	Rutland Iron Works, Stamford	1	1	0
Blake, M. Lock	Bridge, S. Petherton	1	0	0
Blathwayt, R. W.	Dyrham Park, Chippenham	1	1	0
Blinman & Miles	Farrington Gurney, Bristol	1	0	0
Board, R. J.	Skinner, Board & Co., Rupert St., Bristol	1	0	0
Bolden, Rev. C.	Preston Bissett, Buckingham	1	0	0
Bolitho, R. F.	Ponsandane, Penzance	1	1	0
Bolitho, T. B.	Trewidden, Penzance	1	0	0
Bolitho, T R.	Trengwainton, Heamoor, Cornwall	1	1	0

Name.	Residence.	£	s.	d.
Bomford, F. O.	Chirkenhill, Leigh Linton, Malvern	1	0	0
Bond, E.	Hele, Cullompton	1	0	0
Boscawen, Rev. A. T.	Ludgvan Rectory, Long Rock, R.S.O., Cornwall	1	0	0
Boscawen, Hon. John R. de C.	Tregye, Perranwell, Cornwall	1	1	0
Boscawen, Townshend E.	2, Old Burlington St., London, W.	1	0	0
Boteler, Col. F. D.	Lyndhurst, Hants	1	1	0
Bouverie, Hon. Mrs. Pleydell	Coleshill House, Highworth	1	1	0
Bouverie, H. P.	Brymore, Bridgwater	1	0	0
†Bowen-Jones, J.	Beckbury, Shrewsbury	..		
†Bowerman, Alfred	Capton, Williton, Somerset	..		
†Bowring, R.	Polsham House, Wells	..		
Boyle, M.	The Manor, Steeple Fitzpaine, Taunton	1	0	0
Braby, E. E.	Drungewick Manor, Horsham, Sussex	1	0	0
Braby, F. & Co.	Ashton Gate Works, Bristol	1	0	0
Bradford Thomas & Co.	Salford, Manchester	1	0	0
Bradley, Miss E.	Greenway Court, Hollingbourne, Kent	1	0	0
Brand, Admiral Hon. T. S.	Glynde, Lewes, Sussex	1	0	0
†Brassey, A.	Heythrop, Chipping Norton	..		
*†Brassey, H. L. C.	Apethorpe Hall, Wansford, Northants	..		
Bridges, J. H.	Ewell Court, near Epsom	1	1	0
†Brinkley Rev. W.	The Vicarage, Abbots Leigh, Bristol	..		
Bristol Times and Mirror, Proprietors of	Bristol	1	0	0
Bristol Wagon Works Co. (Ltd.)	Lawrence Hill, Bristol	1	1	0
Britten, Forester	Kenswick Manor, Worcester	1	0	0
†Broadmead, W. B.	Enmore Park, Bridgwater	..		
†Brocklehurst, H.D.	Sudeley Castle, Winchcombe	..		
Brockman, F. D.	Beach Borough, Hythe, Kent	1	0	0
Broderip, E.	Cossington, Somerset	1	0	0
Brown F. E.	1,403 Neath Road, Swansea	1	0	0
Browning, Albert, M.A.	The Homestead, Combe Park, Bath	1	1	0
Bruford, R.	Nerrols, Taunton	1	0	0
†Buckingham, Rev. F. F.	The Rectory, Doddiscombsleigh, Dunsford, Devon	..		
Buck, D.	White House, Little Mill, Pontypool	1	0	0
Budd, Felix S.	Clarendon House, Stow Park, Newport, Mon.	1	0	0
Budd, J. E.	Tidebrook Manor, Wadhurst, Sussex	1	0	0
Burdge E.	Bow Farm, Badgworth, near Axbridge	1	0	0

Name.	Residence.	£	s.	d.
Burghclere, Lord	. . . .	1	0	0
Burnard, R.	Cattedown, Plymouth	1	0	0
Burrell, C. and Sons	St. Nicholas Works, Thetford	1	0	0
†Burrell, Sir C. R., Bart.	Knepp Castle, Sussex	..		
Burton, J. H., M.Sc.	County Education Office, Weston-super-Mare	1	1	0
†Bush H. G.	Old Manor House, Keynsham	..		
Bush, Mrs. L. E.	St. Mary's, Atlantic Road South, Weston-s-Mare	1	1	0
Buswell, C. and W.	Torquay	1	0	0
*Bute, The Marquis of	The Castle, Cardiff	2	0	0
Butland, Bros.	Leigham, Plympton	1	0	0
Butler, I.	Panteg House, near Newport, Mon.	1	0	0
Butters, G.	Hill House, Newton, Leominster	1	0	0
Butterworth, R. W.	21, St. James's Square, Bath	1	0	0
Byng, Col. Hon. C.	Northerwood Farm, Lyndhurst, Hants	1	1	0
Cadogan, Earl, K.G.	Culford, Bury St. Edmunds	1	1	0
Cæsar, H. and J.	Knutsford, Cheshire	1	0	0
Cain C. A.	Ethandune, Hoylake, Cheshire	1	0	0
Came, J. and G.	Woodhuish, Brixham	1	0	0
Campbell J.	93, Mansel Street, Swansea	1	0	0
Candy, T. C.	Woolcombe, Cattistock, Dorset	1	0	0
Carew, C.	Collipriest, Tiverton	1	0	0
Carnarvon, Earl of	Highclere Castle, Newbury	1	1	0
*Carr Jonathan.	Wood House, Twerton-on-Avon, Bath	2	2	0
Carr, Richardson	Estate Office, Tring Park, Herts	1	0	0
†Carruthers W., F R.S	14, Vermont Road, Norwood, London, S E.	..		
†Carter, E.	East Upton, Ryde, Isle of Wight	..		
Carter G. V.	Waterston Manor, Dorchester	1	1	0
Carter, J. & Co.	238, High Holborn, London	1	0	0
†Cartwright, F. F.	. . . .	..		
Cartwright, T. G	30, Beaufort Gardens, London, S.W	1	0	0
Carver, H. R.	West House, Chilton Polden, Bridgwater	1	0	0
Cary, Edmund	Pylle, Shepton Mallet	0	10	0
†Cary, John	The Priory, Shepton Mallet	..		
†Cary, W. H.	Steeple Ashton Manor, Trowbridge	..		
Cascajo, J.	Fair View, Dinas Powis	1	0	0

Name.	Residence.	Subscriptions. £	s.	d.
Cattybrook Brick Co. (Ld.).	Baldwin Street, Bristol	1	0	0
Cave, Sir C., Bart.	Lidbury Manor, Sidmouth	1	0	0
Cave, C. H.	Rodway Hill House, Mangotsfield, Bristol	1	0	0
Cazalet, W. M.	Fairlawne, Tonbridge	1	0	0
Cecil, Lord A.	Mount Pleasant, Lymington	1	0	0
Chadwyck-Healey, Sir C. E. H., K.C.B., K.C.	Wyphurst, Cranleigh	1	1	0
†Chapman, C.	Carlecotes Hall, Dunford Bridge, Yorkshire	..		
Chapman, W. W.	Mowbray House, Norfolk Street, Strand, London, W.C.	1	0	0
Charles, W.	1, Royal Crescent, Bath	1	0	0
Chetwynd, Viscount	Wyndthorpe, near Doncaster	1	0	0
Chichester, C. Hamlyn	Bradiford House, Barnstaple, N. Devon	1	0	0
†Chick, J. H.	Wynford Eagle, Maiden Newton, Dorset	..		
†Chick, W. D.	Compton Valence, Dorchester	..		
Childs, C., M.D.	Boscarn, Looe, R.S.O., Cornwall	1	0	0
Christie, A. L.	Tapeley Park, Instow, N. Devon	1	1	0
Churchill, The Viscount, G.C.V.O.	Carlton Club, Pall Mall, London	1	0	0
†Churchward, F.	Hill House, Stoke Gabriel, near Totnes	..		
*Clarendon, Earl of	The Grove, Watford	2	2	0
Clark H. A.	Hinton Field, Hinton Charterhouse, Bath	1	0	0
†Clark, J. J.	Goldstone Farm, Hove, Sussex, (Hon. Local Sec., 1885)	..		
Clark, W. S.	Street, Glastonbury	1	0	0
Clark, W. H.	Rutland Cottage, Combe Down, Bath	1	1	0
Clarke, J. B.	Overleigh House, Street, Somerset	1	0	0
Clayden, H.	Northoe, Park View, Hoddesdon	1	1	0
Clerk, Lieut.-Col. R. M.	Charlton House, Shepton Mallet	1	0	0
*Clifden, Viscount	Lanhydroc, Bodmin	2	0	0
*Clifford, Lord	Ugbrook, Chudleigh	2	2	0
Clinton, Lord	Heanton Satchville, Dolton, N. Devon	1	0	0
Clutton, R. W.	Hartswood, Reigate	1	0	0
†Coats, P.	Sheepcote, Clifford, Herefordshire	..		
Cobb, H. M.	Higham, Rochester	1	0	0
Cobb R. H.	The Grove, Esher	1	1	0
Cobb, R.	Borstal Lodge, Rochester	1	0	0
Colborne, F.	Hinton Charterhouse, Bath	1	0	0
Coleridge, Hon. G.	Clophill, Ampthill, Beds.	1	0	0
Coles, C.	Manor House, Winterbourne Stoke, Salisbury	1	0	0

Name.	Residence.	£	s.	d.
Coles, H. Stratton	Guyers House, Corsham, Wilts	1	0	0
Collings, Right Hon. Jesse, M.P.	Edgbaston, Birmingham	1	0	0
Collins, D.	Newton Ferrers, Callington, Cornwall	1	1	0
Collins, J. S.	St. George's Lodge, Oldfield Road, Bath	1	0	0
Colman, Sir J., Bart.	Gatton Park, Surrey	1	0	0
Colmer Jas. (Ltd.)	Union Street, Bath	1	0	0
*Colston, E.	Roundway Park, Devizes	2	2	0
Colthurst, Symons & Co., (Limited)	Bridgwater	1	0	0
Colville, H. K.	Loders Court, Bridport	1	0	0
Cook, R.	Crazelowman, Tiverton	1	0	0
†Cookson, H. T.	Sturford Mead, Warminster		..	
Cooling, G. and Sons	Northgate Street, Bath	1	1	0
†Cooper, Sir R. P., Bart.,	Shenstone Court, Lichfield		..	
Cope, W.	Southerndown, Glam	1	1	0
†Corbet, Sir W., Bart.	Acton Reynold, Shrewsbury		..	
Corbett E. W. M.	Bute Estate Office, Cardiff	1	0	0
Corbett, J. R.	More Place, Betchworth, Surrey	1	0	0
Corbett, Thomas	Perseverance Iron Works, Shrewsbury	1	0	0
Corfield, W. R.	St. Lawrence, Chepstow	1	0	0
Corker & Bevan	Swansea	1	1	0
†Cork and Orrery, The Earl of	22, Ryder Street, London, S.W.		..	
†Corner, H. W.	Manor House, Inglescombe, Bath		..	
†Cornwallis, F. S. W.	Linton Park, Maidstone		..	
Cory, Sir Clifford	Llantarnam Abbey, Mon.	1	0	0
Cotgrave, H. F.	The Grange, Banwell, Somerset	1	0	0
†Cotterell, Sir J. R. G., Bart.	Garnons, Hereford		..	
Coultas, J. R.	Perseverance Iron Works, Grantham	1	0	0
†Courage, Raymond	Shenfield Place, Brentwood, Essex		..	
Courtis J. W., J.P.	City Hall, Fairwater Croft, Llandaff	1	0	0
†Coussmaker, Lt.-Col. G.	Westwood, Normandy, Guildford, Surrey		..	
*Coventry, The Earl of	Croome Court, Severn Stoke, Worcestershire	2	0	0
Cox, B.	Pwlpen Farm, Christchurch, Newport, Mon.	0	10	0
Cox, J. R.	Leusdon, College Road, Lansdown, Bath	1	0	0
Cox & Sons	47, City Road, Cardiff	1	0	0
Crawshay, W. T.	Caversham Park, Reading	1	0	0
Crewdson, J. D.	Syde, near Cheltenham	1	0	0
Crick, Thomas	Great Ash, Winsford, Dulverton	0	10	0
Cridlan, J. J.	14, Bishop's Road, Bayswater, London, W.	1	0	0

Name.	Residence.	Subscriptions. £	s.	d.
Crofts, D. J.	Sutton Montis, Sparkford, Bath	1	0	0
Crutchley, P. E.	Limminghill Lodge, Ascot	1	0	0
Cuming, A. P.	Moreton Hampstead, Devon	1	0	0
Cundall, H. M., I.S.O., F.S.A.	Richmond, Surrey	1	0	0
†Curre, E.	Itton Court, Chepstow	..		
Currie, L.	Minley Manor, Farnborough, Hants	1	0	0
Custance, Mrs. M.	Woodlands, Southwater, Horsham	1	0	0
Dairy Supply Company (Ltd.)	Museum St., Bloomsbury, London	1	0	0
Damerel and Son	161, Sidwell Street, Exeter	1	0	0
Dániel, Rev. H. A	Manor House, Stockland, Bridgwater	1	0	0
†Daniel, H. T.	The Red House, Cannington, Bridgwater	..		
Daniel, Thos. C.	Stuckeridge, Bampton, North Devon	1	1	0
Darby, A. E. W.	Little Ness, Shrewsbury	1	0	0
Darby, E.	Liscombe, Dulverton	1	0	0
†Darell, D.	Hillfield House, Stoke Fleming, near Dartmouth	..		
*Darnley, Earl of	Cobham Hall, Kent	2	2	0
Date G.	Inglesbatch, Dunkerton	1	0	0
†Davenport, Rev. Geo. H.	Foxley, Hereford	..		
†Davey, J. Sydney	Brockym, Cury - Cross - Lanes, Cornwall	..		
Davey, Sleep, & Co.	Excelsior Plough Works, Plymouth	1	0	0
David & David	Old Bank Chambers, 27, High Street, Cardiff	1	0	0
Davie Sir W. A. F., Bart., C.B.	Creedy Park, Crediton	1	0	0
Davies, D.	The Borough Stores, College Street, Swansea	1	1	0
Davies, E.	Machen House, near Newport, Mon.	1	0	0
Davis Col.	Salt Hill House, near Slough	1	0	0
Davis, F. L.	7, Bute Crescent, Cardiff	1	1	0
†Davis, H. J.	Sutton Montis, Sparkford, S.O., Somerset	..		
Davis & Co.	75, George Street, Oxford	1	0	0
Davis, Prof. J. R. Ainsworth, M.A.	Principal, Royal Agricultural College, Cirencester	1	0	0
†Davy, W.	Tracy Park, Bristol	..		

Name.	Residence.	Subscriptions. £	s.	d.
Daw, J. E.	Exeter	1	1	0
Dawson, W. and F.	Market Place, Bath	1	0	0
Day and Sons	Crewe	1	0	0
Day, John	Huxham, E. Pennard, Shepton Mallet	1	0	0
†Deacon, W. S.	Poynters, Cobham, Surrey	..		
De Bertodano, B.	Cowbridge House, Malmesbury	1	0	0
De Blaquiere, Lord	3, The Circus, Bath	1	0	0
De Hamel, E.	Middleton Hall, Tamworth	1	0	0
De Knoop, J.	Calveley Hall, Tarporley	1	0	0
De Weyer, Col. Victor Bates Van	New Lodge, Winkfield, Windsor	1	1	0
Demuth, R. H.	Downrew, near Barnstaple	1	0	0
Dening, C. & Co.	Chard, Somerset	1	0	0
Dennis, S.	Latton, Cricklade, Wilts	1	0	0
Denny, G. A.	Yarsop, Hereford	1	0	0
†Devas, H. G.	Hartfield, Hayes, Kent	..		
*Devon, The Earl of	Powderham Castle, Devon	2	0	0
*Devonshire, Duke of	Chatsworth, Derbyshire	5	0	0
Dickinson, R. E.	65, South Audley Street, Mayfair, London, W.	1	1	0
Dickinson, W.	Kingweston, Somerton	1	1	0
Dickson and Robinson	Cathedral Street, Manchester	1	1	0
Dickson's, Limited	Chester	1	1	0
†Digby, Lord	Minterne, Cerne Abbas	..		
Digby, F. J. B. Wingfield	Sherborne	1	0	0
Dinham, W. J.	Wilmington Farm, Newton St. Loe, Bath	1	0	0
†Divett, J. R.	. . . .	..		
†Dobson, H. V.	Perridge House, Shepton Mallet	..		
Dodington, R. M.	Horsington Park, Templecombe	1	1	0
Dormer, Capt. C. W. C.	Rousham, Oxford	1	0	0
Drummond, Major F. D. W.	Cawdor Estate Office, Carmarthen	1	0	0
Drummond, H. W.	5, Carlos Place, London, W.	1	0	0
*Ducie, Earl of	Tortworth Court, Falfield, R.S.O., Glos.	2	0	0
Dudding, H.	Riby Grove, Stallingboro', Lincolnshire	1	0	0
Dugdale, J. M.	Llwyn, Llanfyllin, near Oswestry	1	0	0
Duke, H.	Clandon, Dorchester	1	0	0
†Dunboyne, Lord	Greendale, Clyst St. Mary, Exeter	..		
Duncan, R.	Rhoose, near Barry	1	0	0
Duncombe, Col. W. H. O.	Waresley Park, St. Neots	1	1	0
Dunlop, I. M.	Avonhurst, Sneyd Park, Bristol	1	0	0
*Dunraven, Earl of	Dunraven Castle, Bridgend, Glam.	2	2	0
*Dyke, Rt. Hon. Sir W. Hart, Bart.	Lullingstone Castle, Eynsford	2	2	0

Name.	Residence.	£	s.	d.
Eagle Range and Foundry Company (Limited) .	Catherine Street, Aston, Birmingham	1	0	0
Eastwood, A. C. . .	Leigh Court, Taunton . . .	1	0	0
*†Eastwood, J. E. . .	Enton, Witley, Surrey . .	..		
Eavis, W. J. . . .	Worthy Farm, Pilton, Shepton Mallet	1	0	0
Economic Fencing Company (Limited) . . .	Billiter House, Billiter Street, London, E.C.	1	0	0
Eden, R. H. H. . . .	Sherborne. Dorset . . .	1	0	0
†Edgcumbe, Sir Robert Pearce	Dale Lodge, Sunningdale . .	..		
Edmonds, W. . . .	Wiscombe Park, Colyton . .	1	0	0
†Edmondson, A. . .	Church Farm, Dry Sandford, Abingdon	..		
Edridge, Sir. F., Bart. .	Addiscombe Court, Croydon . .	1	1	0
Edwards, A. P. . . .	Hutton, Weston-super-Mare . .	1	1	0
Edwards, C. L. Fry . .	The Court, Axbridge, Somerset .	1	0	0
Edwards, W. H. G. . .	Butcombe Court, Wrington . .	1	0	0
Eldridge, Pope, & Co. . .	Dorchester	1	0	0
Elliott, Sir Thomas H. .	4, Whitehall Place, London, S. W. .	1	1	0
Elliott. T. M. . . .	Biddestone, Chippenham . .	1	0	0
Elton B. A.	Clevedon Court, Somerset . .	1	0	0
*Elton, Sir E., Bart. . .	Clevedon Court. Clevedon . .	2	2	0
Enfield, Viscount . .	Dancer's Hill, Barnet . . .	1	0	0
Ensor, T. & Son . .	Auctioneers. Dorchester . .	1	1	0
Errington, R. . . .	Victoria Mills, Sunderland . .	1	0	0
Esdaile, C. E. T. . .	Cothelstone House, Taunton .	1	0	0
Ettle, J., F.R.H.S. . .	37, Stanley Grove, Weston-super-Mare	1	1	0
Evans, H. M. Glynn . .	Plasissa, Llangenneth, Carmarthenshire	1	0	0
†Evan-Thomas, Commander A.	Caerwnon, Builth Wells, R.S.O. .	..		
†Eve, Mr. Justice . .	Pullabrook, Bovey Tracy, South Devon	..		
Eyles, T. W. . . .	Ashley Wood, Kingsdown, Box, Wilts	1	0	0
Fardoe, M. . . .	Woodram Farm, Pitminster, Taunton	1	0	0
Farmer, A. W. . . .	Barrack Farm, Newport, Mon. .	1	0	0
†Farmer, S. W. . . .	Little Bedwin, Wilts . . .	..		
†Farwell, E. W. . .	11, Laura Place, Bath . . .	..		
†Farwell, Right Hon. Sir Geo.	15, Southwell Gardens, London, S.W.	..		

Name.	Residence.	£	s.	d.
Faudel-Philips H.	Mapleton Stud, Edenbridge, Kent	1	0	0
Fellowes, Right Hon. A. E.	Honingham, Norfolk	1	0	0
Fennell, E. and Sons	11, High Street, Newport, Mon.	1	0	0
Fenton, A. D.	Maristow, Roborough, S. Devon	0	10	0
Ferrand, G. F.	Morland Hall, Alton, Hants	1	0	0
File C.	Elham, Canterbury	1	0	0
Finlay, Col. Alexander	Little Brickhill, Bletchley, Bucks	1	0	0
Finn, L. & G.	Westwood Court, Faversham	1	0	0
Fisher, The Right Rev. Bishop, D.D.	Burgh House, nr. Great Yarmouth, Norfolk	1	0	0
Fisher, Col. H. Oakdene	Ty Mynddi, Radyr, near Cardiff	1	0	0
*Fitzhardinge, Lord	Cranford House, Hounslow	2	0	0
Fletcher, H.	Leweston Manor, Sherborne, Dorset	1	1	0
†Fletcher, Lionel J. W.	West Farleigh, Maidstone		..	
Flower, James	Chilmark, Salisbury	1	0	0
Flower, W. R.	West Stafford, Dorchester	1	0	0
Foot, J.	Woodlands, Dorchester	1	0	0
*†Forester, Capt. F. W.	Saxilbye Park, Melton Mowbray		..	
Forrest, Col. W.	St. Fagan's, Cardiff	1	0	0
Forster, J. C.	Clatford Mills, Andover	1	0	0
Fortt, A. H.	Hatfield House, Hatfield Place, Bath	1	0	0
Foster-Harter, G. L.	Salperton Park, Haselton, R.S.O., Glos.	1	0	0
Foster, W.	Mel Valley, Wake Green Road, Moseley	1	0	0
Fowler & de la Perrelle	Porter's Lane, Southampton	1	0	0
†Fowler, G.	Claremont, Taunton		..	
Fowler, J.	Aston House, Avening, Stroud	1	0	0
Fowler, J., & Co. (Ltd.)	Leeds	1	0	0
Fowler, W. H.	Claremont, Taunton	1	0	0
Fownes, Col.	Manor House, Weston Bampfylde, Sparkford, Bath	1	0	0
Fox Brothers & Co.	Wellington, Somerset	1	1	0
Fox, C. L.	Rumwell Hall, Taunton	1	0	0
Fox, Dr. A. E. W.	Ennox Lodge, Hinton Charterhouse	1	1	0
Fox, Mrs. A.	Brislington House, near Bristol	1	0	0
†Fox, Robert	Grove Hill, Falmouth		..	
Foxcroft, C. T.	Hinton Charterhouse, Bath	1	1	0
Francis, J.	Myrtle Hall, Carmarthen	1	0	0
†Franklen, Col. C. R.	Clemenstone, Bridgend		..	
Franklin, A. T.	Bourne House, Bexley	1	0	0
Frayn, John	St. Stephens, Launceston	1	0	0
*Fremlin, W. T.	Milgate Park, Maidstone	2	0	0
Fricker, J. A.	Suddon Grange, Wincanton	1	0	0
Frost, Adam E.	Kemeys, 53, Caeran Road, Newport, Mon.	1	0	0
Fry, A. M.	8, Sion House, Clifton, Bristol	1	1	0

Name.	Residence.	Subscriptions. £	s.	d.
Fry, H. A.	19, Monmouth Place, Bath	1	1	0
*Fry, J. F.	Ford Abbey, Chard	2	0	0
*Fry, J. S. & Sons (Ld.)	Union Street, Bristol	2	2	0
Fuller, E. R.	Islay Lodge, Pulteney Road, Bath	1	0	0
Fuller, E. R.	Bathford, Bath	1	1	0
†Fuller, G. Pargiter	Neston Park, Corsham		..	
*Fuller, Sir J. M., Bart.	Neston Park, Corsham	2	0	0
Fuller, S. and A.	Bath	1	0	0
Fursdon, Charles	Fursdon, Thorverton, Exeter	1	0	0
Fursdon, E. S.	Bellenden, Exeter	1	1	0
Fyson & Co., Limited	Union Street, Bath	1	1	0
†Galloway, W. G.	. . . .		..	
Gale, T. R.	Combe Hay, near Bath	1	0	0
Gane, P. J.	Estate Office, Pickwick, Corsham, Wilts	1	1	0
Gardiner, Sons & Co.	Nelson Street, Bristol	1	1	0
Garne, W.	Aldsworth, Northleach	1	1	0
Garne, W. T.	Aldsworth, Northleach.	1	1	0
*Garratt, Lt.-Col. T. A. T.	Bishop's Court, Exeter	2	2	0
Garrett, W.	Backwell Hill House, West Town, R.S.O., Somerset	1	0	0
Garton, Jas.	Clarendon Park, Salisbury	1	0	0
Garton, T. R.	Warrington	1	0	0
Gear, W. H.	Bridge Street, Bath	1	1	0
Gent, G.	Tormarton, Chippenham, Wilts	1	0	0
*†George, William E., J.P.	Downside, Stoke Bishop, Bristol		..	
Gibbins, T.	Glenfelin, Neath	1	0	0
†Gibbons, B. G.	Sheephouse Farm, Camerton, Bath		..	
Gibbons George.	Tunley Farm, near Bath	1	0	0
†Gibbons, H.	Church Farm, Clutton, Bristol		..	
Gibbons, P., J.P.	Keynsham	1	1	0
Gibbs, A. H.	Pytte, Clyst St. George, Topsham, Devon	1	0	0
*†Gibbs G. A., M.P.	Tyntesfield, Bristol		..	
†Gibbs, H. M.	Barrow Court, Flax Bourton, Bristol		..	
Gibson, Bruce L.	East Wickham Farm, Welling	1	0	0
Gibson, J. T.	Claverham, near Yatton	1	1	0
Gilbert C. D.	The Manor House, Eastbourne, Sussex	1	1	0
Gilbert, F. W. (Ld.)	Swarkestone, Derby	1	1	0
Gilbey, Sir W., Bart.	Elsenham Hall, Essex	1	1	0
Gill, P. O.	Uplands, Wrington, Somerset	1	0	0
Gillingham, J. and Son	Prospect House, Chard	1	0	0

Name.	Residence.	£	s.	d.
†Gladstone, J.	Bowden Park, Chippenham	..		
Glantawe, Lord	The Grange, Swansea	1	0	0
Glyn, R. F.	The Cross House, Fontnell Magna, Shaftesbury	1	0	0
*Glyn, Sir Richard G., Bart.	Gaunt's House. Wimborne	2	2	0
Godfrey, W. J.	Exmouth	1	0	0
†Godman, C. B.	Woldringfold, Horsham	..		
Godman, J.	The Raswell, Hascombe, Godalming	1	0	0
†Goldney, Sir Prior, Bart., C.B.	Derriads, Chippenham	..		
Gomer, W.	Killerton Estate Office, Broadclyst, Exeter	1	0	0
Goodden, J. R. P.	Compton House, Sherborne	1	0	0
Goodman, Sons, Pollard and Bruford	3, Hammet Street, Taunton, and Broad Street House, London, E.C.	1	0	0
Goodrop, A.	Wick Farm, Combe Hay, Bath	1	0	0
Gordon, G. H.	The Barn House, Sherborne	1	0	0
Gore-Langton, Hon. H. P.	Hatch Park, Taunton	1	0	0
Goring, C.	Wiston Park, Steyning	1	0	0
†Gorringe, Hugh	Kingston-by-Sea, Brighton	..		
Gotto C. L.	Passaford, Hatherleigh, N Devon.	1	1	0
Grace A.	39, Welsh Back, Bristol	1	0	0
Grant, C. E.	Bursar, King's College, Cambridge.	1	0	0
Grant, W. J.	Pentonville, Newport, Mon.	1	0	0
Greaves, R. M.	Wern, Portmadoc, North Wales	1	0	0
†Greenall, Mrs. C. E.	Willoughby Hall, Grantham	..		
†Greenall, Sir G., Bart.	Walton Hall, Warrington	..		
Greenham, W. N.	Overton, West Monkton, Taunton	1	1	0
Greenslade, W. R. J.	Fairfield, Trull, Taunton	1	0	0
Greenway, W.	Halse, Taunton	1	0	0
Greenwell, Sir W., Bart.	Marden Park, Woldingham, Surrey	1	0	0
Gregory, W.	Wellington, Somerset	1	0	0
†Guest, Lady Theodora	Inwood, Templecombe.	..		
Guille, H. C. de Stevens	St George, Castel, Guernsey	1	0	0
Guise, Sir W. F., Bart.	Elmore Court, Gloucester	1	0	0
Gunning, A. E.	Fosse Farm, Combe Hay, Bath	1	0	0
Gunning Bros.	Park Farm, Newton St. Loe, Bath	1	0	0
Guyon, Rev. H. C.	The Rectory, Lamyat, Bath	1	0	0
Habgood, G.	Harley Lodge, Wimborne	1	0	0
Hall, Crabtree and Heap	25, Price Street, Birkenhead	1	0	0
Hall, A. C.	The Manor, Great Rollright, Chipping Norton	1	0	0
†Hambro, Sir Everard A.	Hayes Place, Beckenham, Kent	..		

Name.	Residence.	£	s.	d.
Hancock, C. R.	The Ashlands, Warmley, near Bristol	1	0	0
Hancock, C. L.	Manor House, Cothelstone, Taunton	1	1	0
Hancock, Rev. Prebendary F.	The Priory, Dunster, Somerset	1	0	0
Hancock, H. C.	The Court, Milverton, Taunton	1	0	0
Hancock, R. D.	Halse, Taunton	1	0	0
Harbottle, E.	Topsham	1	0	0
Harding, C.	Upton Grove, Tetbury	1	0	0
Harding, T. K.	Ashton Gifford House, Codford, Bath	1	0	0
Harding, R.	Fenswood Farm, Long Ashton, Bristol	1	0	0
Hardwick, E. A.	Kewstoke, Weston-super-Mare	1	0	0
Harpur, W.	Borough Engineer, Cardiff	1	0	0
Harris, A.	Brounsell Farm, Stourton Caundle, Stalbridge	1	0	0
Harris, C. & T. (Ltd.).	Bacon Curers, Calne, Wilts	1	0	0
Harris, H.	Singleton Park Farm, Sketty, S.O., Glam.	1	0	0
Harris, J. M.	Chilvester Hill, Calne, Wilts	1	0	0
Harrison, G.	Gainford Hall, Darlington	1	0	0
Harrison, Miss	West Hay, Wrington	1	0	0
Harrison, McGregor & Co.	Leigh, Lancashire	1	0	0
Haversham, Lord	Trevina, Tintagel, Cornwall	1	0	0
Haward, T. W.	The Cottage, Margam, Port Talbot	1	1	0
Hawkins, Mrs.	10, Portland Place, London, W.	1	1	0
†Haydon, Lt.-Col. W. H.	Maidford, Malmesbury, Wilts		..	
Hayes, F. J.	West Pennard, Glastonbury	1	0	0
*Heathcoat-Amory, Sir J. H., Bart.	Knightshayes Court, Tiverton, Devon	2	2	0
Heathcoat-Amory, I. M.	Hensleigh, Tiverton, Devon	1	0	0
Heberden, W. B., C.B.	Elmfield, Exeter	1	0	0
Hember, S. H.	Queen Charlton, near Bristol	1	0	0
†Henderson A. N.	Street Ashton House, Lutterworth		..	
Henderson, Sir A., Bart.	Buscot Park, Faringdon, Berks	1	1	0
Henry, Lt.-Col. F.	Elmstree, Tetbury	1	0	0
Hepple, E. M.	Camerton, near Bath	1	0	0
Herbert, Maj.-Gen. Sir Ivor, Bart., M.P.	Llanarth Court, Raglan, Mon.	1	0	0
Hesse, F. W.	Yeomans, Wrington, East Somerset	1	0	0
†Hewitt, G. Southby.	Day, Son & Hewitt, 22, Dorset Street, London, W.		..	
Hibbard, J. M.	Garth, Batheaston, Bath	1	0	0
Hick, W. A.	Wayfield, Batheaston, Bath.	1	0	0
Hicks, Mrs. R.	Treganhoe, Newbridge, R.S.O., Cornwall	1	0	0
Higgins, B.	Millhouse Farm, Chesterblade, Shepton Mallet	0	10	0

Name.	Residence.	Subscriptions. £	s.	d.
Higgs, J. M.	Farnborough, Kent	1	0	0
†Hill, B. H.	Uphill, Weston-super-Mare	..		
Hill, Edward	Stratton House, Evercreech	1	0	0
Hill, H.	Paulton, near Bristol	1	0	0
Hill, J. Ledger	Combe Grove, Bath	1	0	0
Hill, V. T.	Mendip Lodge, Langford, Bristol	1	1	0
Hill, W. B.	Underhill Farm, Cannock Road, Wolverhampton	1	0	0
Hippisley & Sons	Wells, Somerset	1	0	0
Hippisley, R. J. B.	Ston Easton Park, Bath	1	0	0
Hiscock, A., jun.	Manor Farm, Motcombe, Shaftesbury, Dorset	1	0	0
Hiscock, E.	Ashley Farm, Marnhull, Dorset	1	0	0
†Hoare, Sir H. H. A., Bart.	Stourhead, Zeals, S.O., Wilts.	..		
Hobbs, J. T.	Maisey Hampton, Fairford	1	0	0
Hobbs, R. W.	Kelmscott, Lechlade	1	0	0
*Hobhouse, Rt. Hon. H.	Hadspen House, Castle Cary	2	0	0
Hoddinott, S.	Worminster Farm, Shepton Mallet	1	0	0
Holland and Coombs	Bristol	1	0	0
Holland, J. R.	Wonham, Bampton, Devon	1	0	0
Holman, F. A.	Dunley Manor, near Whitchurch, Hants	1	0	0
Holt Needham, O. N.	Barton Court, Colwall, near Malvern	1	0	0
†Hooper, R. N.	Stanshawes Court, Chipping Sodbury	..		
†Hope, W. H. B.	Eastwood, East Harptree, Bristol	..		
Hopkins, W.	Pancross Farm, Llancarvan	1	0	0
Hopper, H. R.	Merryweather & Sons, Greenwich Road, London, S.E.	1	1	0
Horlick, J., D.L.	Cowley Manor, Cheltenham	1	0	0
†Horner, Sir J. F. Fortescue	Mells Park, Frome	..		
Hornsby and Sons (Ltd.)	Grantham, Lincoln	1	0	0
Horton, Rev. Le G.	Wellow Vicarage, Bath	1	1	0
Hosegood, A. W.	Williton, Taunton	1	0	0
Hosegood, Obed., jun.	Dillington, Ilminster	0	10	0
Hosken, W. J.	Pulsack, Hayle, Cornwall	1	0	0
Hoskins, R. J.	Beard Hill Farm, Shepton Mallet	1	0	0
Hoskyns, H. W. P.	North Perrott Manor, Crewkerne, Somerset	1	0	0
Houldsworth, A. F.	Widcombe, Kingsbridge, Devon	1	1	0
Houlton, W.	Broadfield Farm, Northleach, R.S.O.	1	0	0
Hounsell, J. M.	Wraxall Manor Farm, Cattistock, Dorset	1	0	0
Howard, J. and F.	Britannia Works, Bedford	1	0	0
Hudson, E. V.	Wolseley Works, Witton, Birmingham	1	0	0

Name.	Residence.	Subscriptions. £	s.	d.
†Hughes, A. E.	Wintercott, Leominster		..	
Humphries, Sidney	Eastfield Lodge, Westbury-on-Trym, Bristol	1	1	0
Hunter, Sir Charles, Bart., M.P.	1, West Eaton Place, London, S.W.	1	0	0
Hunter, J.	Seed Merchant, Chester	1	0	0
†Hurle, J. C.	Brislington Hill, Bristol		..	
Hurst and Son	152, Houndsditch, London	1	0	0
Hussey, J. W.	Bouverie House, Exeter	1	0	0
†Hylton, Lord	Charlton, near Radstock.		..	
Ibbotson, R.	The Hawthorns, Knowle, Warwickshire	1	0	0
*Ilchester, Earl of	Melbury, Dorchester	2	2	0
Imbert-Terry, H. M.	Strete Raleigh, Whimple	1	0	0
Innes, G. P. Mitchell	Craig-yr-Haul, Castleton, Cardiff	1	0	0
International Harvester Co. (Limited)	80, Finsbury Pavement. London, E.C.	1	0	0
*Irby, Hon. G. N.	Porthamel, Llanfair, P.G., Anglesey	2	0	0
Ireland, A. C.	Brislington Hall, near Bristol	1	1	0
Irvine, H. O.	Southerndown, Bridgend, Glam.	1	0	0
*Islington, Lord	Hartham Park, Corsham	2	0	0
*Ismay, J. H.	Iwerne Minster, Blandford, Dorset	2	0	0
Jackson, Sir H. M., Bart.	Llantillio Court, Abergavenny	1	0	0
James R. H. and Sons	8, Queen Square, Bristol	1	0	0
Jardine, E., M.P.	The Park, Nottingham.	1	1	0
Jarmain, T. M.	Haseley Iron Works, Tetsworth	1	0	0
Jefferis, Mrs.	Royal Refreshment Rooms, Bristol	1	0	0
Jefferson, J.	Willaston House, Nantwich	1	0	0
Jenkins, D.	Flemingstone Court, Cowbridge, Glam.	1	0	0
Jenkins, E.	Charlton Road, Keynsham, Bristol	1	0	0
Jenkins, Captain Vaughan	St. Winifreds, Combe Down, Bath	1	0	0
Jenkins, W. H. P.	Frenchay Park, Bristol	1	0	0
Jennings, F. H.	Cockfield Hall, Bury St. Edmunds.	1	0	0
*Jersey, Earl of	Middleton Park, Bicester, Oxon.	2	0	0
Jervoise, Mrs. B. A. L.	Herriard Park, Basingstoke	1	0	0

Name.	Residence.	£	s.	d.
Jervoise, F. H. T.	Herriard Park, Basingstoke	1	1	0
Jeyes' Sanitary Compounds Company	Cannon Street, London, E.C.	1	0	0
John, E.	Cowbridge, Glamorgan	1	0	0
Johns, W. B.	Holnicote, Minehead	1	0	0
Joicey, J.	Poulton Priory, Fairford, Glos.	1	0	0
†Jonas, F. N.	. . . . . .		..	
Jones, T. S.	Fondez, Radyr, Cardiff	1	0	0
Jones, W.	Pencisely, near Cardiff	1	0	0
Keel, W. W.	Stanton Drew, Somerset	1	0	0
Keeling, G.	North Hill Farm, Dunkerton, Bath	1	0	0
Keene, James B. & Co.	*Journal* Office, Bath	1	0	0
Kekewich, T. H., J.P.	Peamore, Exeter	1	0	0
Kell & Co.	Gloucester	1	0	0
Kelly, Capt. A. L.	Cadbury House, Wincanton, Somerset	1	0	0
Kelway, W.	Huish Episcopi, Langport	1	1	0
Kemble, C. A.	Hallatrow, Bristol	1	0	0
†Kemp, L. J.	Maer, Exmouth		..	
Kennaway, Rt. Hon. Sir J. H., Bart., M.P.	Escot, Ottery St. Mary	1	1	0
†Kettlewell, W. W.	East Harptree Court, Bristol		..	
Keynsham Stud Co.	Keynsham, near Bristol	1	0	0
*Keyser, C. E.	Aldermaston Court, Reading	2	0	0
Keyworth, J. and H. & Co.	35, Tarleton Street, Liverpool	1	0	0
King, H.	High Street, Tewkesbury	1	0	0
King, J., M.P.	Sandhouse, Witley, Surrey	1	0	0
King and Sons, R.	Milsom Street, Bath	1	1	0
King, W. E. M.	Donhead Lodge, Salisbury	1	0	0
Kingscote, M. J.	Watermoor House, Cirencester	1	0	0
Kingscote, T., M.V.O.	Watermoor House, Cirencester	1	0	0
Kingwell, H. J.	Great Aish, South Brent, S. Devon	1	0	0
Kinneir, H.	Redville, Swindon	1	0	0
Kinsey, T.	Nantyffin Farm, Vochriw, Glam.	0	10	0
†Knollys, C. R.	Ruffield, Winchester		..	
Knox, E.	Kilmersdon, Bath	1	1	0
†Kruse, W.	Park, Truro		..	

Name.	Residence.	£	s.	d.
†Lake, C.	Oakley, Higham, Kent	..		
*Lansdowne, Marquis of	Bowood, Calne	2	0	0
Larkworthy, E. W.	Messrs. J. L. Larkworthy & Co., Worcester	1	0	0
†Latham, T.	Dorchester, Oxon	..		
Laurey A.	Varful, Ludgvan, Long Rock, R.S.O., Cornwall	1	0	0
Lawrence, J.	Stall Pitt's Farm, Shrivenham	1	0	0
Lear, F. G.	The Court Farm, Rodley, Westbury-on-Severn, Glos.	1	0	0
Lee, Major-Gen. H. H.	The Mount, Dinas Powis, near Cardiff	1	0	0
Lees Sir T., Bart.	South Lychett Manor, Poole	1	1	0
Le Feuvre, F. V.	La Fosse, St. Peter's, Jersey	1	0	0
Legard, A. G.	Brow Hill, Batheaston, Bath	1	0	0
Lennard, Sir H., Bart.	Wickham Court, West Wickham, Kent	1	0	0
Lethbridge, Charles	Heytesbury House, Heytesbury, Wilts	1	0	0
*Lethbridge, Sir Wroth P. C., Bart.	Sandhill Park, near Taunton	2	0	0
Leverton, W. A.	Columb John Farm, Stoke Canon, Exeter	1	0	0
Leverton, W.	Woolleigh Barton, Beaford, North Devon	0	10	0
Lewis Col. H.	Green Meadow, near Cardiff	1	1	0
Lewis, Wm. and Son	*Herald* Office, Bath	1	1	0
†Ley, John Henry	Trehill, Exeter	..		
†Leyland, C. J.	Haggerston Castle, Beal, Northumberland	..		
Liddell, C. O.	Shirenewton Hall, Chepstow	1	1	0
Liddon, E., M.D.	Silver Street House, Taunton	1	0	0
Lipscomb, Godfrey	Margam Park, Port Talbot	1	0	0
Lister & Co.	Dursley, Glos.	1	1	0
†Lister, J. J.	Warninglid Grange, Haywards Heath	..		
†Llangattock, Lord	The Hendre, Monmouth	..		
Llewellyn, Col. Evan H.	The Court Farm, Langford, Bristol	1	1	0
Llewellyn, Llewellyn T. E.	Hackwood, Basingstoke	1	1	0
*Llewelyn, Sir J. T. D., Bart.	Penllergaer, Swansea	2	2	0
*Lloyd, Herbert	Plas Cilybebyll, Pontardawe, R.S.O., Glam.	2	2	0
*†Long, Rt. Hon. Walter H., M.P.	Rood Ashton, Trowbridge	..		
Long, Col. William	Woodlands, Congresbury, Somerset	1	0	0
Longman, R.	Wraxall, Evercreech, Bath	1	0	0
Lopes, Sir H. Y. Buller, Bart.	Maristow, Roborough, Devon	1	0	0

Name.	Residence.	Subscriptions. £	s.	d.
Loram Brothers	Cathedral Dairy, Exeter	1	1	0
Lovelace, T.	Bratton Court, Minehead, Somerset	1	0	0
Lovell, G. W.	Tyndall Villa, Wells Road, Bath	1	0	0
Ludlow, Lord	Lamport, Northampton	1	1	0
Lumley, T.	25, Upper Grosvenor Street, London, W.	1	0	0
†Lutley, J. H.	Brockhampton, Worcester		..	
Luttrell, Capt. A. F.	Court House, East Quantoxhead, Bridgwater	1	0	0
Luttrell, Claude M. F.	15, Gay Street, Bath	1	1	0
*MacAndrew, J. J.	Lukesland, Ivybridge	2	0	0
McCalmont D. H. B.	Crockford's Farm, Newmarket	1	1	0
McIntosh, Mrs. C. M.	Havering Park, Havering Atte Bower, Essex	1	1	0
Major, H. J. and C. (Ltd.)	Bridgwater	1	0	0
Mallett, W. E.	The Octagon, Bath	1	0	0
†Mansell, A. E.	Mount Vernon, Melton Mowbray, Tasmania		..	
Marcus M.	High Trees, Redhill, Surrey	1	0	0
Marden, E. D.	Marston House, Marston Magna, Bath	1	0	0
Marden, H.	Ashwick, Dulverton	1	1	0
Marfell, R. H.	Great House Farm, Llangeview, Usk	1	0	0
Marken, E. R.	Henstaff Court, Pontyclun, R.S.O.	1	1	0
Marker, Richard	Combe, near Honiton	1	0	0
Marriner, C. F.	Thorpe Hall, Hasketon, Woodbridge, Suffolk	1	1	0
Marshall, L. H.	Chippenham	1	0	0
Marshall, Sons & Co.	Britannia Iron Works, Gainsboro'.	1	0	0
Martin, E. G. Bromley	Ham Court, Upton-on-Severn	1	0	0
Martin, J.	Thorverton, R.S.O., Devon	1	0	0
Martin and Carnes	Taunton	1	0	0
Martyn, G.	Tremeddan, Liskeard, Cornwall	1	1	0
Mason, F. F.	Swansea	1	0	0
Massey-Harris Co. (Ltd.), (C. W. Dawkins, General Manager)	54 & 55, Bunhill Row, London, E.C.	1	0	0
Master, Col. T. W. Chester	Knole Park, Almondsbury	1	1	0
Masters A.	Lanelay Hall, Llantrissant, S. Wales	1	0	0
Mathews, Ernest	Little Shardeloes, Amersham, Bucks	1	0	0
Mathews, E. R. Norris, F.R.Hist. Soc.	Central Library, Bristol	1	0	0
Mathias, W. H., J.P.	Tynycymmer Hall, Porth, near Pontypridd	1	0	0

Name.	Residence.	Subscriptions. £	s.	d.
Matthews, Adam	The Cornhill Stud, Swansea	1	0	0
Matthews, David	Llwyneryr, Morriston, Glam.	1	0	0
Matthews, L. B.	Milton, Gillingham, Dorset	1	0	0
Maule Major-Gen. H. B.	2, Penn Lea Road, Newbridge Hill, Bath	1	0	0
Maule, M. St. John	Chapel House, Bath	1	0	0
May, A. C.	Avon House, Stoke Bishop, Bristol	1	0	0
Maynard, W. T.	Yeovil	1	0	0
†Mayo, Henry	28, Cornwall Road, Dorchester	..		
†Mayo, John	Coker's Frome, Dorchester	..		
Meade-King, W. O.	Walford House, Taunton	1	0	0
Meager, F. F.	Melbourne House, Swansea	1	0	0
Meddick, William G.	11, Great Stanhope Street, Bath	1	0	0
Medlycott H. M.	Milborne Port, Somerset	1	0	0
Merriman, T. W.	126, Bryn Road, Swansea	1	0	0
Merry, Richard	Goulds, Broadclyst, Exeter	0	10	0
Merryweather, J. C.	4, Whitehall Court, London, S.W.	1	0	0
Merthyr, Lord	The Mardy, Aberdare	1	0	0
Methuen, General Lord, C.B., C.M.G.	Corsham Court, Wilts	1	0	0
*Michaelis, M.	Tandridge Court, Oxted, Surrey	2	2	0
Michie, D.	Tichborne Park Estate Office, Alresford, Hants	1	0	0
Mildmay, Capt. C. B. St. J.	Hallam, Dulverton	1	0	0
†Mildred, G. B.	Newington House, Craven Arms, Shropshire	1	0	0
†Miles, Sir Henry, Bart.	Abbots Leigh, Bristol	..		
Millbank, Sir Powlett C. J., Bart.	Norton Manor, Presteign	1	0	0
Miller, T. H.	Clan Villa, Bathwick Hill, Bath	1	1	0
Miller-Hallett, A.	Goddington, Chelsfield, Kent	1	1	0
Mills, B. W.	31, Cambridge Place, Paddington, London, W.	1	0	0
Milsom, C. and Son	9, Fleet Street, Swindon	1	1	0
Mitchell, A. C.	Highgrove, Tetbury	1	0	0
Mitchell, E. J.	The Palmer Tyre (Ltd.), 119, Shaftesbury Avenue, London, W.C.	1	0	0
†Mitchell, F. J.	Llanfreckva Grange, Caerleon, Mon.	..		
Molassine Co.	East Greenwich, London, S.E.	1	0	0
Montefiore, Mrs.	Worth Park, Crawley, Sussex	1	1	0
Moody, C.	Maismoor, Evercreech	1	0	0
Moore-Gwyn, J. E.	Duffryn, Neath, Glamorgan	1	0	0
†Moore, H. F.	42, Angell Road, Brixton, London, S.W.	..		
Moore, W. and Son	9 and 10, Monmouth Street, Bath	1	0	0
Moore-Stevens, Col. R. A.	Winscott, Torrington, Devon	1	0	0
Morant, E. J.	Brockenhurst Park, Hants	1	0	0

Name.	Residence.	£	s.	d.
Morant, Mrs. E.	Brokenhurst Park, Hants	1	0	0
Morel, C. E.	. . . .	1	0	0
*Moreton, Lord	Sarsden Lodge, Chipping Norton	2	2	0
Morgan, Lieut.-Col. Courtenay	Tredegar Park, Newport, Mon.	1	0	0
Morgan, Lewis	Cathedral Road, Cardiff	1	1	0
*Morgan, T.	Capital and Counties Bank Buildings, Taff Street, Pontypridd	2	2	0
Morgan, T. S.	Whimple House, Whimple, Exeter	1	0	0
Morgan, W. A.	St. Leonards Lodge, St. Andrews, Fife	1	1	0
Morgan-Richardson, C.	Morgenan, Rhoshill, R.S.O.	1	0	0
*Morley, Earl of	Saltram, Plympton, Devon	2	0	0
Morley, Charles	Shockerwick, Bath	1	1	0
*Morris, C.	Highfield Hall, St. Albans	2	0	0
Morris and Griffin (Ltd.)	Maindee, Newport, Mon.	1	1	0
Morris, Sir R. A., Bart.	Sketty Park, Swansea	1	0	0
Morris, Son and Peard	Auctioneers, North Curry, Taunton	1	0	0
Morris, W.	4, Norton Road, Hove, Brighton	1	0	0
†Morrison, J. A.	Fonthill House, Tisbury, Wilts		..	
Morse, L. L.	The Croft, Swindon	1	1	0
*Mount-Edgcumbe, Earl of	Mount Edgcumbe, Devonport	2	2	0
†Mucklow, E., J.P.	Woodhill, Bury, Lancashire		..	
Muller, Jansen	Newport, Mon.	1	0	0
Muntz, F. E.	Umberslade, Hockley Heath, Warwickshire	1	0	0
Muntz, J. O.	Goodameavy, Yelverton	1	0	0
Murray-Anderdon, H. Edwd.	Henlade House, Taunton	1	1	0
Naper, Col. W. D.	2B, Dawson Place, Hyde Park, London, W.	1	0	0
Napier, H. B.	Ashton Court Estate Office, Long Ashton, Bristol	1	1	0
Neagle, D. T.	London, Glos. and N. Hants Dairy Company, Clifton, Bristol	1	0	0
Neal, J. F.	Kingsdon, Taunton	1	0	0
Neeld, Sir A. D., Bart., C.B.	Grittleton, Chippenham	1	0	0
Nelder, C. W.	Carnarvon Arms, Dulverton, Somerset	0	10	0
†Neville-Grenville, Robert	Butleigh Court, Glastonbury		..	
New H. G.	Craddock, Cullompton, Devon	1	0	0
Newington, C.	Oakover, Ticehurst, Sussex	1	0	0
Newman, Sir R. H. S. D. L., Bart.	Mamhead Park, near Exeter	1	1	0
†Newton, J. G.	Millaton House, Bridestowe, Devon		..	
Nicholetts, E. C.	The Lons, Bitton, Gloucestershire	1	0	0
Nichols, G.	49, Broad Street, Bristol	1	0	0

Name.	Residence.	Subscriptions. £	s.	d.
Nickisson, J. L. . . .	Hinton Manor, Swindon . .	1	0	0
Nicoll, D. . . .	Burntwood House, near Winchester	1	0	0
Nix, J.	Tilgate, Crawley, Sussex . .	1	1	0
Noke, G. H. . . .	20, Old Bond Street, Bath . .	1	1	0
Norman, H. T. . . .	Cushuish, Kingston, Taunton .	1	0	0
*Normanton, Earl of . .	Somerley, Ringwood . . .	2	0	0
North, G. F. . . .	Stratfield Saye, Mortimer, R.S.O., Berks.	1	0	0
Northcote, Lord . .	25, St. James's Place, London, S.W.	1	0	0
*Northumberland, Duke of	Albury Park, Guildford . .	5	0	0
Oakey, G. . . .	Brittleware Farm, Charlwood, Surrey	1	0	0
Oakley, H. E. . . .	Dewstow, near Chepstow . .	1	0	0
Oborne, T. . . .	Twinhoe Farm, Midford, Bath .	1	0	0
†O'Hagan, Lord . .	Pyrgo Park, Havering Atte Bower, Romford		..	
O'Halloran Miss P. . .	8, Upper George Street, London, W.	1	0	0
Osborn, C.	Woolston, North Cadbury, Bath .	1	0	0
Osborne, J. . . .	9, Clifton Park, Clifton . . .	1	1	0
Osborne, W. . . .	Barrack Farm, Odd Down, Bath .	1	0	0
Osmond and Son . .	Spalding	1	0	0
Paget, A. B. . . .	Church Farm, Fawley, Hants .	1	0	0
Paget, L. C. . . .	Middlethorpe Hall, Yorks. . .	1	0	0
*Paget, Sir Richard, Bart. .	9, King's Bench Walk, Temple, London	2	0	0
Pain, W. H. . . .	High House, Kingsbridge . .	1	0	0
Palmer, G. Ll. . . .	Lackham, Lacock, Wilts . .	1	0	0
Palmer, G. W. . . .	Marlston Lodge, Newbury . .	1	0	0
†Palmer, R. . . .	Lodge Farm, Nazeing, Waltham Cross, Essex		..	
Palmer, W. H. . .	York Buildings, Bridgwater . .	1	0	0
†Parker, Hon. Cecil . .	Eccleston Paddocks, Chester .		..	
Parker, F. J. . . .	Plymouth Street, Swansea . .	1	0	0
Parkin, P. W. . . .	. . . .	1	0	0
Parmiter, P. J. & Co. .	Tisbury, Wilts	1	0	0
Parry, Okeden E. . .	Turnworth, Blandford . . .	1	0	0
Parry Okeden, Lieut.-Col. U. E. P. . . .	Turnworth, Blandford . . .	1	0	0
Parsons, A. J. . . .	31, Sussex Street, St. Philip's, Bristol	1	0	0

Name.	Residence.	Subscriptions. £	s.	d.
†Parsons, J. D. Toogood, jun.	Manor View, Rusthall, Tunbridge Wells		..	
†Parsons, R. M. P.	Misterton, Crewkerne, Somerset		..	
Pass, A. D.	Manor House, Wootton Fitzpaine, Charmouth, Dorset	1	0	0
Payne, G..	Eastbourne Dairy, Camden Road, Bath	1	0	0
Peacock, E.	Bewdley Villa, Bath	1	0	0
Peacock, W.	3, Buckingham Gate, London	1	1	0
Peake-Mason, W. J.	The Manor House, Trent, Sherborne	1	0	0
Pearce, S. & Co.	46a, Market Street, Manchester	1	0	0
Pearse, T. C.	Leigh Farm, Dulverton	1	0	0
Peel, E. Morton	80, Walter Road, Swansea	1	0	0
Peel, Hon. W., M P.	52, Grosvenor Street, London, W.	1	1	0
Pember, G. H.	. . . .	1	0	0
*Pembroke, Earl of	Wilton House, Salisbury	2	0	0
Penberthy, Professor J.	Dean Hall, Newnham, Glos.	1	0	0
Pendarves, W. Cole	Pendarves, Camborne, Cornwall	1	1	0
Percival, P.	Manor House, Berrow, Burnham	1	1	0
Perkins, Col. E. K.	Shales, Bitterne, Hants.	1	1	0
Perowne, Col. W.	Posbury House, Crediton	1	0	0
†Perry-Herrick, Mrs.	Beau Manor Park, Loughborough		..	
Petherick, R., jun.	Acland Barton, Landkey, Barnstaple	0	10	0
Petters (Ltd.)	Yeovil	1	0	0
Pettifer, T. & Co.	Eydon, Banbury	1	0	0
†Pettifer, T. Valentine, F.R.C.V.S.	The Limes, Tetbury, Gloucester		..	
†Phillips, C. D.	The Gaer, Newport, Monmouth		..	
Phillips, F.	Nantcoch, Newport, Mon.	1	1	0
Phillipps L. R.	Deane House, Whitchurch, Hants	1	1	0
Phipps, C. N. P..	Chalcot, Westbury, Wilts	1	1	0
Piggott Brothers & Co.	59, Bishopsgate Street Without, London, E. C.	1	0	0
Pike, C. A.	Permanent Nitrate Committee, Friar's House, 39-41, New Broad Street, London, E.C.	1	0	0
†Pinney, R. W.	Rockwood, Byfleet, Surrey		..	
†Pitt, W.	South Stoke House, Bath		..	
Plaister C.	Church Farm, Monkton Combe, Bath	1	0	0
Plumptre, H. F.	Goodnestone, Dover	1	0	0
*Plymouth, Earl of	Hewell Grange, Bromsgrove	4	0	0
*Poltimore, Lord	Hartsbourne Manor, Bushey Heath, Herts	3	3	0
Poole, Mrs. A. R.	King's Hill, Dursley	1	1	0
Pope, Alfred	Dorchester	1	0	0
Pope, A. R.	Culliford House, Dorchester	1	0	0
Pope, John	Nowers, Wellington, Somerset	1	0	0

Name.	Residence.	Subscriptions £	s.	d.
Pope, S. P.	Howden, Tiverton, N. Devon	1	1	0
Popham, H. L.	Hunstrete House, Pensford, Bristol	1	0	0
Porter, W. J. H.	Glendale Farm, Wedmore	1	0	0
†Portman, Hon. C. B.	Goldicote, Stratford-on-Avon	..		
Portman, Hon. Mrs. C. B.	Goldicote, Stratford-on-Avon	1	0	0
*Portman, Viscount	Bryanston, Blandford	5	0	0
Price, Owen	Nantyrharn, Cray, Brecon	1	0	0
Prichard, H. L.	Penmaen, R.S.O., Glam.	1	0	0
Pritchard, D. F., J.P.	Crumlin Hall, Crumlin, Mon.	1	1	0
Proctor, H. and T.	Cathay, Bristol	1	1	0
Pullen, James	Tormarton, Gloucester	1	0	0
†Purgold, A. D.	Ebnal Lodge, Gobowen, Salop	..		
Quantock Vale Cider Co.	North Petherton, Bridgwater	1	0	0
Quested, J. E.	The Firs, Cheriton, Kent	1	0	0
*†Radnor, Earl of	Longford Castle, Salisbury	..		
†Ransome, B. C.	Orwell Works, Ipswich	..		
Ransome, E. C.	Orwell Works, Ipswich	1	0	0
Rawlence, Ernest A.	Newlands, Salisbury	1	0	0
Read, B.	Church Farm, Cam, Dursley, Gloucester	1	0	0
Rees, D	Brynbedw, Tylorstown, Glam.	1	1	0
Rees, W. J.	Laurels, Swansea	1	1	0
Reeves, Robert and John, and Son	Bratton Iron Works, Westbury, Wilts	1	0	0
*Reid, J. McClymont	Cleeve Grange, Bishops Cleeve, Gloucestershire	2	0	0
Rendall, W.	Hempton Lodge, nr Hythe, Kent	1	1	0
Riccard, H. J. H.	2, Nelson Place, Weston, Bath	1	0	0
Rice H. E. H.	Dene Court, Dover	1	0	0
Richardson, Rev. A.	Combe Down Vicarage, Bath	1	0	0
Riley, O. C. H.	The Brainge, Putley, Ledbury, Herefordshire	1	0	0
Roberts, J. D. Cramer	Thornton, Frant, Sussex	1	1	0
Robins, J.	High Bray, South Molton	0	10	0
Robins, T.	Gratton Barton, High Bray, South Molton	1	0	0
Robinson, J.	Rings Hill Farm, Borstal, Rochester	1	1	0
Robinson, E. S. & A. (Ltd.)	Redcliffe Street, Bristol	1	1	0
Robinson, G. & Co.	137, Fenchurch Street, London, E.C.	1	0	0
Robinson, John & Co.	Bristol	1	1	0

Name.	Residence.	£	s.	d.
Roe, W. J.	West Pennard, Glastonbury	1	0	0
Rogers, E. P.	Burncoose, Perranwell, Cornwall	1	0	0
Rogerson, R. W.	Ward and Co., Northgate Street, Bath	1	0	0
Rolleston, S. V.	Saltford House, Saltford, Bristol	1	0	0
Rolleston, Col. V., J. P.	Saltford House, near Bristol	1	1	0
Rose, W. J.	Rowley Farm, Combe Hay, Bath	1	0	0
Rothschild, Lord	Tring Park, Herts	1	0	0
Rouse-Boughton, Sir W. St. A., Bart.	Downton Hall, Ludlow	1	0	0
Rouse-Boughton, Lady	Downton Hall, Ludlow	1	0	0
Rowe, F. W.	Trevego, Lostwithiel, Cornwall	1	0	0
Rowliffe, E. L.	Hall Place, Cranleigh, Guildford	1	1	0
Royal Guernsey Agricultural and Horticultural Society	Guernsey	1	0	0
Runciman, Rt. Hon. Walter, M.P.	Doxford, Chathill, Northumberland	1	0	0
Ruston, Proctor & Co.	Lincoln	1	0	0
Rutherford, J. A.	Highclere Estate Office, Newbury, Berks	1	0	0
Sage, J.	Vale Farm, Batcombe, Evercreech	1	0	0
Saillard, P.	Buchan Hill, Crawley, Sussex	1	0	0
St. Aubyn, Col. E.	Glyn, Bodmin Road, Cornwall	1	0	0
St. Audries, Lord	St. Audries, Bridgwater	1	1	0
†Salmon, H. C.	North Fields, Bridgwater		..	
Salmon, W.	Yonder Broadpool Farm, Doulting, Shepton Mallet	1	0	0
Salomons, L.	Norbury Park, Dorking, Surrey	1	0	0
Salter, Benjamin	Newlands, Broadclyst, Exeter	1	0	0
Salter, T.	Beare Farm, Broadclyst, Exeter	1	0	0
Samuelson, Ernest	Bodicote Grange, Banbury	1	1	0
Sanders, R. A., M.P.	Barwick House, Yeovil	1	0	0
Sanford, Col. E. C. A., C.M.G.	Nynehead, Wellington, Somerset	1	0	0
Sanford, H. S. J. A.	The Court House, Middlehill, Broadway, Worcestershire	1	0	0
Sankey, R. I.	Queen Anne's Mansions, St. James's Park, London, S.W.	1	0	0
Scobell, Col. Barton L. J.	Kingwell Hall, High Littleton, near Bristol	1	1	0
Scobell, G. B.	Kingwell Hall, near Bath	1	0	0
†Scott, T.	Ditton Court, Maidstone		..	

Name.	Residence.	Sub-scriptions. £	s.	d.
†Seaton, Lord	Beechwood, Plympton, Devon	..		
Sedgwick, T. E.	26, Oriental Street, Poplar, London, E.	1	0	0
Senior and Godwin	Auctioneers, Sturminster Newton, Dorset	1	1	0
Shakerley, Col. H. W.	Enham Place, Andover	1	0	0
†Shaw-Stewart, Walter R.	Hayes, Shaftesbury	..		
Shatford, F.	Home Farm, Marshfield, Chippenham	1	0	0
Sheldon, W.	Long Lane Farm, Bexley Heath	1	0	0
*Shelley, Sir John, Bart.	Shobrooke Park, Crediton	2	2	0
Shelley, J. F.	Shobrooke Park, Crediton	1	0	0
Sheppard, W. A.	14, Widcombe Crescent, Bath	1	0	0
†Sherston, Major C. D.	Evercreech, Somerset	..		
†Sherston, C. J. T.	Evercreech, Somerset	..		
†Sherston, T. P. D.	. . . .	..		
Sillifant, A. O.	Culm Leigh, Stoke Canon, Exeter	1	0	0
Simonds. L. de L.	Audley's Wood, Basingstoke	1	1	0
*Simpson, Charles (Hewthorn & Co.)	Walton Lodge, Broxbourne, Herts	2	0	0
Simpson, F. C.	Maypool, Churston Ferrars, R.S.O., S. Devon	1	0	0
Sinclair, James	8, Breams Buildings, Chancery Lane, London, E.C.	1	0	0
*†Singer, A. M.	Hove, Sussex	..		
*Singer, W. M. G.	42, Charles Street, Berkeley Square, London, W.	2	0	0
Skinner, G. C.	Pound, Bishops Lydeard	1	0	0
Skrine, Col. H. M.	Warleigh Manor, Bath	1	1	0
Slatter J.	Paxford, Campden, S.O., Glos.	1	0	0
Smail, J. F.	Warren Wood, Hayes, Kent	1	1	0
Smart, G. E.	Combe Hay Manor, Bath	1	1	0
Smith, A. J.	Brooklea, St. Anne's Park, Bristol	1	0	0
Smith, Bros. & Co. (Ltd.)	Westgate Buildings, Bath	1	0	0
Smith, C. M.	South Brook, London Road, Bath	1	0	0
Smith, J.	Monkton, near Hereford	1	0	0
†Smith, J. W.	Thinghill Court, Hereford	..		
Smith, Hon. Mrs. Murray	Gumley Hall, Market Harborough	1	0	0
†Smith, S. Lee	Larkfield, Maidstone	..		
*Smith, Hon. W. F. D.	Greenlands, Henley-on-Thames	5	0	0
Smith-Barry J. H.	Stowell Park, Pewsey, Wilts.	1	0	0
*Smyth, Lady	Ashton Court, Bristol	2	2	0
Smyth, P.	Broford, Dulverton	1	0	0
Smyth-Osbourne, J. S.	Ash, Iddesleigh, N. Devon	1	0	0
Smyth-Richards G. C.	Filleigh Lodge, South Molton	1	0	0
Snow, Major A. D.	Wall Tyning, Bitton, nr. Bristol	1	1	0
*Somerset, Duke of	Maiden Bradley, Bath	2	0	0
Somerset Trading Co.	Bridgwater	1	1	0
†Somerville, A. F.	Dinder House, Wells, Somerset	..		

Name.	Residence.	Subscriptions. £	s.	d.
South-Eastern Agricultural College (The Principal)	Wye, Kent	1	0	0
Southwood, J. W.	1, St. Peter's Terrace, Twerton, Bath	1	0	0
Spear Brothers and Clark (Limited)	Southgate Street, Bath	1	0	0
†Spearman, Sir J. L. E., Bart.	The Lodge, Gullane		..	
Speke, Major W.	Jordans, Ilminster	1	1	0
Spencer, F.	Pondsmead, Oakhill, near Bath	1	1	0
Spencer, W. C.	. . . .	1	0	0
Spicer, Capt.	Spye Park, Chippenham	1	0	0
Spicer, Lady M.	Spye Park, Chippenham	1	0	0
*Spillers & Bakers (Ltd.)	Cardiff	2	0	0
Spratts' Patent (Limited)	24 and 25, Fenchurch Street, City, London, E.C.	1	0	0
Sprye, Rev. T. de L.	Priston Rectory, Bath.	1	0	0
Staley, A. E.	Combe Hill House, Barton St. David. Somerton, Somerset	1	0	0
*†Stanley, E. A. V.	Exford, Taunton		..	
Starkey, T.	Woodville, Ilfracombe	1	0	0
Stenhouse, V.	Courtlands, Taunton	1	1	0
Stephens, H. C.	Avenue House, Finchley, N.	1	0	0
Stevens, R. N.	Woodham Hall, Woking, Surrey	1	0	0
Stevenson, R. E. W.	Tue Brook, Liverpool	1	0	0
Steward, Major R. H.	Freshford, near Bath	1	0	0
Stoddart, F.	Manor House, Walton, Clevedon	1	1	0
Stoffell, W. M.	11, Cavendish Place, Bath	1	1	0
Stokes, C. W. Rees	Town Clerk, Tenby	1	1	0
Stooke, J.	Sherford, Brixton, Plymouth	1	0	0
Storrar, J.	Grittleton, Chippenham	1	0	0
Stothert, P. K.	Bradford-on-Avon, Wilts	1	0	0
†Strachie, Lord	Sutton Court, Pensford, Somerset		..	
Strangways, Hon. H. B. T.	Shapwick, Bridgwater	1	0	0
Stratton, Richard	The Duffryn, Newport, Mon.	1	0	0
Stride, T.	Southgate Street, Bath	1	0	0
Strode, G. S. S.	Newnham Park, Plympton	1	0	0
*Stuart, Lord Ninian Crichton, M.P.	Cardiff	2	2	0
Stuckey, H. V. G.	Pillhead, Bideford, North Devon	1	0	0
Studdy, T. E.	Mazonet, Stoke Gabriel, Totnes	1	0	0
Studley, J. Im.	Toller Fratrum, Maiden Newton	1	0	0
Studts, H.	Ty-Gwyn, Clydach, Swansea	1	1	0
*Sutton, Martin J.	Wargrave Manor. Wargrave, Berks	2	0	0
*Sutton and Sons	Seedsmen, Reading	2	2	0
Swanwick, Bruce	R. A. College Farm, Cirencester	1	0	0
Swanwick, R.	College Farm, Cirencester	1	0	0
Swithinbank, H.	Denham Court, Denham, Bucks	1	0	0
Symons, J. & Co. (Ltd.)	The Plains. Totnes	1	1	0

Name.	Residence.	Sub-scriptions. £	s.	d.
Talbot, Miss	Margam Park, Port Talbot	1	0	0
Tamlin, W.	Talbot House, Stanley Road, Teddington, Middlesex	1	0	0
Tangyes (Limited)	Cornwall Works, Birmingham	1	0	0
Tanner, H.	Westgate Buildings, Bath	1	0	0
Tapp, David James	Knaplock, Winsford, Dulverton	1	0	0
Tapp, J. A.	Knaplock, Dulverton	1	0	0
Tasmania, Agent General for	5, Victoria Street, London, S.W.	1	0	0
Tate, J. A.	Fairfield, Wells, Somerset	1	0	0
Tatem, W. J.	The Court, St. Fagan's, Glam.	1	0	0
Taverner, G. E.	Budlake, Devon	1	0	0
Tayleur, C. W.	Hampton, St. Mary Church, Torquay	1	0	0
Taylor, A. H. W.	8, New Bond Street, Bath	1	0	0
Taylor, C.	Rock Hill Farm, Keynsham	1	0	0
†Taylor, George	Cranford, Hounslow, W.	.		
Taylor, H. W.	Showle Court, Ledbury, Hereford	1	0	0
†Tazewell, W. H.	Manor House, Taunton	..		
*Temple, Earl	Newton St. Loe, Bath	2	0	0
Templeman, G. D.	Hambridge, Curry Rivell, Taunton	1	0	0
Thomas, D. A., M.P.	Llanwern, Newport, Mon.	1	1	0
Thomas, Sir Griffith	Court Herbert, Neath	1	0	0
Thomas, I.	Ely Farm, Cardiff	1	0	0
Thomas, J. A.	Dolgoy, West Cross, R.S.O., Glam.	1	0	0
Thomas, J. C.	Hatch Beauchamp, Taunton	1	0	0
Thomas, T. P.	Merevale, Dinas Powis.	1	0	0
Thomas-Stanford, C.	Preston Manor, Brighton	1	0	0
Thomas, W. Jones	Dros-y-Mor Park Road, Barry, Glam.	1	1	0
Thomas, W. Meyler	Ynysplwm, Llantrissant	1	0	0
Thomas & Evans & John Dyer (Ltd.)	Swansea	1	0	0
Thompson, J. W. H.	2, Southwick Crescent, London, W.	1	1	0
Thomson, Sir R. White	Broomfield Manor, Exbourne, N. Devon	1	0	0
Thorley, J.	Wood Hall, Shenley, Herts	1	0	0
Thorne, J. G.	Horridge, Romansleigh, S. Molton.	0	10	0
Thresher, E. B.	Corfe Hill, Weymouth	1	0	0
Thring, D. T.	Boughton House, near Kettering	1	1	0
Thurlow, G. R.	Stowmarket	1	0	0
*Thynne, Lord A., M.P.	15, Manchester Square, London	2	0	0
Tidswell, R. J.	Haresfield Court, Stonehouse, Glos.	1	0	0
Tillard, Rear-Admiral P. F.	Alford House, Castle Cary	1	0	0
Tilley, R.	Chippenham	1	0	0
Tilley, W. T. S.	East Compton, Shepton Mallet	1	1	0
Timmins, T. B.	24, Green Park, Bath	1	0	0
Tipper, B. C., and Son	Balsall Heath, Birmingham	1	0	0
Titt, J. W.	Implement Maker, Warminster	1	0	0

Name.	Residence.	£	s.	d.
Toogood, E. K.	Messrs. Toogood & Sons, Southampton	1	0	0
Topping, S.	Hinton Charterhouse, Bath	1	0	0
Torr, E. R. Berry	Instow, N. Devon	1	0	0
Tory, H. J. S	Damory Court, Blandford	1	0	0
Tory, Randolph	Charisworth, Blandford	1	0	0
Trafford, G. R.	Hill Court, Ross, Herefordshire	1	1	0
*Tredegar, Viscount	Tredegar Park, Newport, Mon.	2	2	0
Treffry, I. de C.	Penarwyn, Par Station	1	1	0
Trefusis, Col. The Hon. J. S.	Hawkmoor, Bovey Tracy, Devon	1	0	0
Trelawney, J. S.	Harewood, Buckfastleigh, Devon	1	0	0
Tremaine, W. H.	Trerice, Newlyn East, Cornwall	1	0	0
Tremaine, W. H.	Sherborne, Northleach, Cheltenham	1	0	0
Tremayne, Capt. W. F.	Carclews, Perran ar Warthal, Truro	1	1	0
Tremayne, Hon. Mrs.	Sydenham, Lewdown, R.S.O., N. Devon	1	0	0
Trepplin, Ernest C.	Orchard Portman, Taunton	1	0	0
Trevilian, E. B. Cely	Port Town, Taunton	1	0	0
Troyte, H.	Huntsham Court, Bampton, Devon	1	0	0
†Troyte-Chafyn-Grove, G.	North Coker House, Yeovil		..	
Trump, W.	Borough Farm, Broadclyst, Exeter	1	0	0
Tucker, H.	Sutton Montis, Sparkford, Bath	1	0	0
Tucker, M. & Co.	Broad Quay, Bath	1	0	0
†Tudway, C. C.	The Cedars, Wells, Somerset		..	
Turner, A. P.	The Leen, Pembridge, Hereford	1	0	0
Turner, Drysdale	R.A. College, Cirencester	1	0	0
Turner, J. H.	West Mollard, South Molton	1	0	0
Turner Brothers	Milsom Street, Bath	1	0	0
Turnor, Lt.-Col. W. W.	Pinkney Park, Malmesbury, Wilts	1	0	0
Twentyman, Exors. of the late A. C.	Castlecroft, Wolverhampton	1	0	0
Tyler, General	Llantrythyd, near Cowbridge	1	1	0
Unite, John	291, Edgware Road, London	1	1	0
Unwin, L.	Tiverton	1	0	0
†Vacher, E. P.	Compton, Winchester		..	
Valletort, Viscount	Mount Edgcumbe, Devonport	1		0

Name.	Residence.	£	s.	d
Vaughan, Rev. Preb.	The Rectory, Wraxall. Somerset	1	0	0
Veitch, P.	Exeter	1	0	0
Vellacott, W. H.	Hillside, Dunster	1	0	0
†Verulam, Earl of	Gorhambury, St. Albans	..		
Villar, W. J.	Tauntfield House, Taunton	1	0	0
Vipan and Headley	Leicester	1	0	0
Vosper Stanley	Merafield, Plympton St. Mary	1	0	0

Name.	Residence.	£	s.	d
Waide, W. and Sons	Churn Works, Leeds	1	0	0
Waldegrave, Earl	Chewton Priory, Somerset	1	0	0
*Waleran, Lord	44, Hans Mansions, London, S.W.	2	0	0
Walker, E. G. F.	The Hollies, Chew Stoke, Bristol	0	10	0
Walker, S.	Tremont House, Oldfield Park, Bath	1	0	0
Wallis and Stevens	North Hants Iron Works, Basingstoke	1	0	0
Wallop, Hon. J.	Barton House, Morchard Bishop, Devon	1	0	0
Walrond, Hon. L., M.P.	Bradfield, Cullompton	1	1	0
†Walsingham, Lord	Merton Hall, Thetford, Norfolk	..		
Walter, Col. A. F.	Bearwood, Wokingham	1	1	0
Ward, J. E.	Red Lodge, Purton, Wilts	1	0	0
Ward, R. B.	Westwood Park, Droitwich	1	0	0
Wardlaw, H. and A.	Holway Farm, Sherborne	1	0	0
†Waring, C. E.	Conservative Club, Cardiff	..		
Waring, H. F.	Farningham Hill, Farningham, Kent	1	0	0
Warne, J.	Treveglos, St. Mabyn, R.S.O.	1	0	0
Warne, T.	Trevisquite Manor, St. Mabyn, R.S.O.	1	0	0
†Warner, T. C.	Bretterham Park, Suffolk	..		
†Warre, Frederick		..		
Waterloo Cake Mills Co. (Limited)	Wilmington, Hull	1	0	0
Watson, H. R.	Purse Caundle, Sherborne	1	0	0
Watson, T. E.	St. Mary's Lodge, Clytha Park, Newport, Mon.	1	0	0
Watts, J.	Backwell, near Bristol	1	0	0
*Way, General N. S.	Manor House, Henbury, Bristol	2	0	0
Way, Rev. W. H. Bromley	East Timewell House, Bampton, Devon	1	0	0
Webb, E. and Sons	Wordsley, Stourbridge	1	0	0
Weech, J. and Sons	Maudlin Street, Bristol	1	0	0

Name.	Residence.	£	s.	d.
Welch-Thornton, H.	Beaurepaire, Basingstoke	1	1	0
Were, J. Kennet	Sidmouth	1	1	0
Wernher, Sir J., Bart.	Luton Hoo, Beds.	1	0	0
Wessex Associated News (Ltd.)	Westgate Street, Bath	1	0	0
Weston, H.	The Bounds, Much Marcle, *via* Dymock, Herefordshire	1	0	0
Wheatley J L	Town Clerk, Cardiff	1	0	0
†White, A. R.	Charnage, Mere, Wilts	..		
White, F.	Torweston, Williton	1	0	0
White, H. G.	Whitley, near Melksham	1	0	0
White, R. B.	Herringston, Dorchester	1	0	0
White, W. J. S.	Zeals Park, Wiltshire	1	0	0
*†Whitehead, Sir C., F.L.S.	5, Highland Gardens, St. Leonards-on-Sea	..		
Whitley, W. & H.	Primley Farm, Paignton	1	0	0
Whitting, C. E.	Uphill Grange, Weston-super-Mare	1	1	0
Whittuck, E. A.	Claverton Manor, Bath	1	1	0
Wilder, J.	Yield Hall Foundry, Reading	1	1	0
Wilkinson, C.	The Batch, Flax Bourton, Bristol	1	0	0
Willcock, T.	Dunham Mount, Bowdon, Cheshire	1	0	0
Willcox, W. H., & Co.	36, Southwark Street, London	1	0	0
†Willett, P. A.	Brighton	..		
Williams, E.	Lanusk, Usk	1	0	0
*Williams, Edward Wilmot	Herringston, Dorchester	2	2	0
Williams, G. L.	Chavenage, Tetbury	1	1	0
Williams, J.	Llanover Estate, Newport, Mon.	1	0	0
Williams, J.	Scorrier House, Scorrier, Cornwall	1	0	0
Williams, J. C., M.P.	Werrington Park, Launceston	1	0	0
Williams, M.	Whiston Hall, Albrighton, Wolverhampton	1	0	0
†Williams, M. Scott	Woolland House, Blandford	..		
Williams, P. D.	Lanarth, St. Keverne	1	1	0
†Williams, Col. Robert, M.P.	Bridehead, Dorchester	..		
Willis, J.	Southwood, Evercreech	1	0	0
Willis, J. Deane	Bapton Manor, Codford, Wilts	1	1	0
*Wills, W. D. & H. O.	Bedminster, Bristol	2	0	0
Wills, W.	Marlwood, Thornbury, Glos.	1	0	0
Wilmot, S. M.	Albert Road, St. Philips, Bristol	1	0	0
Wilson, A. de C.	Madresfield Grange, Malvern.	1	0	0
Winans, W.	Surrenden Park, Pluckley, Kent	1	0	0
Winchester, Marquis of	Amport St. Mary, Andover	1	1	0
Wingfield, A. H.	Ampthill House, Ampthill	1	0	0
†Winterton, Earl, M.P.	Shillinglee Park, Petworth	..		
Withers, W. R.	Lower Court Farm, Long Ashton, Bristol	1	0	0
Wodehouse, Rt. Hon. E. R.	56, Chester Square, London	1	0	0
Wood, W. A., M. & R. Machine Co.	36, Worship Street, London, E. C.	1	1	0

Name.	Residence.	Subscriptions. £	s.	d.
Wood-Homer G. C.	Bardolf Manor, Dorchester	1	0	0
Woodhouse, G. E.	Norden, Blandford	1	0	0
Woodhouse, Lt.-Col. S. H.	Heatherton, Taunton	1	0	0
†Woodiwiss, Capt. E. S.	. . . .	..		
Woods, Col. Thomas	Llandaff Place, Llandaff	1	0	0
Wootton, J. H.	Byford, Hereford.	1	1	0
Worrall, W. H.	Clyst St. Mary, Exeter	1	0	0
Wright, Col. W. C.	Gwerneinon, Blackpyl, Swansea	1	0	0
Wright, J. R.	Ashbury House, Ashbury, N. Devon	1	1	0
Wyatt, A. C.	St. James Street, St. James Square, Bath	1	0	0
†Wynford, Lord	Warmwell, Dorchester	..		
Yeo Bros, Paull & Co. (Limited)	81, Victoria Street, Bristol	1	1	0
Yorwerth, T. J.	High Street, Cowbridge, Glam.	1	0	0
Young, E. A.	Mangotsfield, Bristol	1	0	0
Zacharias, J. & Co.	Oxford	1	0	0

(15)

Total . . 1137

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END OF VOL. VI.

BATH:
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HORSES.

Capenor, Nutfield, Surrey. Stud of high-class pedigree Hackneys, Brood mares: Fragility, Medelia, Beckingham, Lady Helmsley, Leopardess, Shelbourne, Portia, Madam Pompadour, etc. Stallions: Khedive (11486) by Hopwood Viceroy, out of District Maid; Capenor Matador, by Mathias A 1, out of Madam Pompadour; Forthright (11433), by Polonius, out of Fortuna. Mares, young stock and show horses, by Polonius, Mathias, and Royal Danegelt, etc., for sale. Apply Thos. Heron, at above address.

Carley Samuel Green, Saxtead, Framlingham, Suffolk. Suffolk horses. Entire and very select stud to be sold Michaelmas, 1912 (no drafts previous), including dams Royal and County prize-winners, and other prize winners.

Conchar, John, Wylde-Green, Birmingham. Breeder of high-class Shires and Hackneys. Several have been successful in the show-ring. Colts and Fillies by the leading Stallions of the day.

Dickinson Bros., Cark Mills, Cark-in-Cartmel. Thoroughbreds, Hunters, Shires and Clydesdales, all ages, thoroughly trained and unbroken. Best Yorkshire, Cumberland, Westmorland, and Lancashire blood. Nearly all prize-winning stock, 350 prizes won in six years, including London, Royal, Lancashire Championships, North Lonsdale, Cartmel, Warrington, Ramsbottom, Southport, Windermere, Ormskirk, and Westmorland County. Prices reasonable. Communications invited.

Fleming, J. Willis, Chilworth Stud, Romsey, Hants. Polo stallions, "Rajah" and "Go-ahead" Thoroughbred stallions, "Vectis." (Vol. xxii G.S.B.), by "Vernham," by "Symington," dam "Fruit Girl" by "Meddler"; and "Lias" (Vol. xx G.S.B.), by "Ladas" out of "St. Ia" by "St. Serf" out of "Berengaria" by "George Frederick." This horse won 3rd Prize at Dublin Show this year (1911). Particulars, Stud Groom.

Honner, Major Wm., Ardenode, Brannockstown, Co. Kildare. Thoroughbreds, Chasers and Hunter sires. Staying blood ("Red Prince II," "Royal Meath," "Ascetic"), a speciality. Numerous winners in Showyard and over the country.

HORSES—*continued.*

Kerr, John, Redhall, Wigton, Cumberland. Breeder and exporter of Clydesdale Stallions, Mares and Fillies. Colours, size, quality and pedigrees right for any country. Also Shorthorns, good milkers, long pedigrees, etc. Wigton Station, two miles.

Kingsdown Stud (late Langley Park, Berks). Shetland Ponies, Cattle, and Sheep Dogs. Pedigree Ponies. At stud "Champion Charles of Langley," black, $37\frac{1}{2}$ inches; "Fassolt," dark brown, $31\frac{1}{2}$ inches high. Both are prize-winners and sire good stock. Pure bred registered bull. At stud: "Isoloo," "Moose" colour. Shetland Sheep Dog. At stud: "Serwick Jarl," black and tan, white ruffle. Winner of nine firsts, five seconds, ten silver medals, etc., under eight different judges. Fees on application. Young stock for sale. Postal address, Kingsdown, Sevenoaks, Kent. Telegraph, Kingsdown, Farningham. Railway station, Wrotham, S.E. & C. Rly.

McAllister, Wm., The Inverness Hackney Stud, Inverness. Breeder and Exhibitor of high-class Hackneys. Winners principal shows, England and Scotland. Young stock for sale, by leading Sires.

Muntz, Frederick Ernest, Umberslade, Hockley Heath, Warwickshire. Shire Horse Stud Stallions, Mares, Fillies; prize winners. Particulars from Mr. John T. B. Hartley, Estate Office, Umberslade, Hockley Heath, Warwickshire.

Smith, A. Carlyle, Ashmoor Stud, Sutton Hall, Woodbridge, Suffolk. Suffolk Punches. Stallions, Mares and Fillies always on sale. Export trade a speciality. Station, Melton, G.E.R., $3\frac{1}{2}$ miles.

Taylor, C. Howard, Hampole Priory, Doncaster. Good young Polo Ponies always for sale, bred from mares which have been good Polo Ponies and prize winners; also a few undersized Ponies, suitable for racing in India.

HORSES—*continued.*

Miller, W. S., Forest Lodge, Brecon, S. Wales. Most extensive breeder of best class of Welsh Mountain Ponies, Cobs, and Entires in Wales.

George, Isaac, J.P., Manor House, Llanvihangel, Gobion, Abergavenny. Shire-bred Stallions, Mares, Fillies; Hereford Bulls and Cows; all entered in Stud and Herd Book: several prize winners from best strains. Penpergwm station.

CATTLE.

Aberdeen Angus.

Curragh Grange, Curragh Camp. Herd of Aberdeen-Angus Cattle, the property of Captain J. H. Greer. Select families: Ericas, Prides, Jipseys, Nightingales, Heather Blossoms, Miss Burgess, Lady Idas, Ruby's and Marys. Bulls and Cows for sale at all times. Apply R. Weller Curragh Grange Farm, Curragh Camp, Co. Kildare.

Dalmeny Aberdeen-Angus Herd, the property of the Earl of Rosebery, K.G. and K.T. Bulls and Heifers of the following families always for sale at moderate prices, viz.:—Trojan-Ericas, Prides of Aberdeen, Lady Idas, Blackbirds, Miss Burgess, Queen Mother, etc. Apply, Farm Manager, Dalmeny Park, Edinburgh.

Rosehaugh, Ross-shire. Famous herds of Aberdeen-Angus and Shorthorn Cattle; select studs of Clydesdale Horses and Shetland Ponies. All of first-class breeding. Particulars from Gilbert R. McGarva, Rosehaugh, Avoch, Ross-shire.

Hursley Park Herd of Aberdeen-Angus Cattle, the property of Sir George Cooper, Bart., comprising Erica Pride, Miss Burgess, Lady Ida, Matilda, Jemima of Morlich families. Prizes won during 1910: 8 firsts, 5 seconds, 2 gold medals, 1 silver medal, 1 challenge cup, 1 champion prize, 2 reserve champions. Bulls, Cows and Heifers for sale. Apply to James E. Thorold, Estate Office, Hursley Park, Winchester.

Stenhouse Herd of Aberdeen-Angus Cattle. Bulls, Cows, Heifers for sale of the best Trojan-Erica, Prides of Mulben, and Jilt families. Stock Bull: The Royal Breed Champion, and H. and A. Society 1st Prize bull of 1906—1908, "Everlasting of Ballindalloch" (24435). Inspection invited. Apply D. M. MacRae, of Stenhouse, Thornhill, Dumfriesshire.

CATTLE—*continued.*

Dexter Shorthorn.

Honner, Major Wm., Ardenode, Brannockstown, Co. Kildare. Dexter-Shorthorn (new breed), bred for beef and dairy combined. Numerous prizes won in Dublin, London, and Birmingham.

Dutch.

Woolley, John T., Spursholt, Romsey, Hampshire. Black and White Herd Cattle in British Holstein Herd Book. Young Bulls for sale. Dams and sires from Lord Rayleigh's, Mr. Westrop's, and late Mr. Brown's herds. Heavy milking strains.

Herefords.

Thomas, D. A., M.P., Llanwern, Newport, Mon. Prize-winning herd from Stocktonbury, Hampton Court, Court House, and other leading strains. Young Bulls and Heifers by "Perfection" (22450), and "Pandorus" (23658), for sale. All eligible for the A.H.R. Also pedigree Shropshire Sheep. Inspection invited. One hour from Hereford, two and a half from London.

Jerseys.

Cadogan, Right Hon. Earl, K.G. Jersey Cattle. Pedigree stock. This herd has won a very large number of prizes and Blythwood Bowls. For particulars apply M. Mortimer, Estate Office Culford, Bury St. Edmunds.

Sturgis, Henry Parkman, Givons, Leatherhead, Surrey. Pedigree Jersey, Cows, Heifers, and Bulls, bred from prize winners and good milkers. Station: Leatherhead (L. and S.W.R. and L.B. and S.C.R.). Particulars from W. Peters, Bailiff.

Thorneycroft, Sir John, Steyne, Bembridge, Isle of Wight. Best milking and exhibition strains. Now in herd immediate descendants of Lady Viola, Vanilla 2nd, and Tiber 2nd. Bulls only used from first prize-winning cows, with records of 700 to 1,000 gallons per annum. Average

CATTLE—*continued.*

milk yield for all cows in herd whole of 1909, 718 gallons; butter ratio of whole herd, 18.00.

Kerries and Dexters.

PALMER, Capt. R. E. Pedigree Kerries, Jerseys, and Kerry-Dexters, Bulls and Heifers, all ages. Address, The Foreman, Oaklands Park, Newdigate, Surrey. Stations: Holmwood, Horley, or Faygate, L.B. and S.C. Telegrams: Newdigate. Telephone No. 5 Rusper, Horsham.

Lincolnshire Red Shorthorns.

ROBINSON & SON, ANDERBY, ALFORD, LINCS. Lincoln Red Shorthorn Bulls for sale, descended from the best herds. Beef and Milking qualities combined. Inspection invited. Station: Mumby Road, G.N. Railway.

STAPLEFORD PARK HERD, LINCOLN RED SHORTHORNS. A few in-Calf Heifers from good milkers for Sale. Apply C. S. Harvey, Wymondham, Oakham.

Red Polls.

BROWN THOMAS AND SON, MARHAM HALL, DOWNHAM MARKET. Herd established fifty-six years. P.3. strain predominates. Many prizes won at breeding and fat stock shows, including R.A.S.E. Championship, and in 1911 first for Yearling Bulls, R.A.S.E., Suffolk and Essex Shows. Daily milk record kept; milk tested with Gerber's Butyrometer. Stock of all ages for sale. Telegrams: "Brown, Hall, Marham,"

Shorthorn.

DALMENY SHORTHORN HERD, the property of the Earl of Rosebery, K.G. and K.T. The Herd is composed of the following families, viz.:—Augustas, Clippers, Princess Royal, Rosewood's, Marigolds', Broadhooks, Lovelys, Rosemarys, Julias, and Bates-Waterloos. Apply, Farm Manager, Dalmeny Park, Edinburgh.

GRANT, G. R., AUCHNACREE, FERN, BRECHIN, N.B. Select Shorthorns, Cruikshank Butterflys, and other well-known families. Present stock Bull: Strowan Butterfly 24th. Telegrams: "Fern."

HOBBS, ROBERT W. & SONS, KELMSCOTT, LECHLADE, GLOS. Herd of 500 Dairy Shorthorns. Milk records kept. Forty champion, first, second, and third prizes won for inspection and in milking trials at the leading shows in 1911, including Championship, Group Challenge Cup, three firsts, one second, and one third at the Royal Show, Norwich; Championship, one first and two second prizes at Tring; and first and second at the London Dairy Show. Bulls and bull calves always on sale. Cows in milk and the Stock Bulls have passed the Tuberculin Test.

LEWIS, THE HON. HERBERT C., HEAN CASTLE, SAUNDERSFOOT, PEMBROKESHIRE. Pedigree Shorthorns of the Augusta, Beauty, Brawith Bud, Broadhooks, Clipper, Lady Clara, Missie, and Bates Duchess and Blanche families. Stock Bulls: Proud Champion (100096), roan; Morning Star (109463), roan.

SANDERS, J. W., GILMORTON, LUTTERWORTH. Dairy Shorthorns, combining milk with flesh. Winners at London Dairy Show, 1908, and Shorthorn Society's Prizes, Royal Dublin 1909 and 1910, Oxford, Royal Counties and Royal, 1910. Average milk yield of herd for last five years, 7,325 lbs. Young Bulls for sale.

STRATTON, RICHARD, THE DUFFRYN, NEWPORT. Large Herd. Milk and flesh combined. Heifers and Bulls of good colours for sale.

South Devons.

Pedigree South Devon Bulls and Heifers for sale, of noted prize-winning strains. Bull in service: Fireman (2887), whose dam won first and cup in milking, giving 65lbs. per day. Apply John Wood, Bourton, Totnes.

Sussex.

BANNISTER, T., LIMEHURST, HAYWARD'S HEATH, SUSSEX, has always for sale Pedigree Sussex Cattle descended from the oldest and best strains of blood, noted for early maturity, the production of the best beef and working oxen, and ability to thrive in all weathers on the roughest fare.

SHEEP.

Dorset Horn.

HAMBRO, SIR EVERARD, K.C.V.O., MILTON ABBEY, BLANDFORD, DORSET. Registered Flock Dorset Horns.

SHEEP—*continued.*

Prize-winners Royal, Royal Counties, Bath and West, Somerset, and other shows, and a yearling ewe and ram of this flock took 1st Prize and Grand Champion at the World's Fair, St. Louis. Telegrams: Yates, Estate Office, Milton Abbas.

HAMBRO, E. A., MILTON ABBEY, BLANDFORD, DORSET. Registered Flock Dorset Horns, prize winners Royal, Royal Counties, Bath and West, Somerset and other shows, and a Yearling Ewe and Ram of this flock took First Prize and Grand Champion at World's Fair, St. Louis. Telegrams: Yates, Estate Office, Milton Abbas.

Hampshire Downs.

DARLING, SAM, BECKHAMPTON HOUSE, MARLBOROUGH. Registered Hampshire Downs; prize-winners at home and abroad; selections always for sale. Annual Ram Sale in August. Apply, H. A. Brown, Galtee More Farm, Beckhampton, Marlborognh. Telegrams: Galtee More, Avebury. Station, Marlborough.

JUDD, EDWARD THOMAS, COCUM, BARTON STACEY, HANTS. Pure-bred Registered Hampshire Downs. Noted for great size, quality, and hardiness of constitution. Selections always for sale. Inspection invited.

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FINN, ARTHUR, WESTBROKE, LYDD, KENT. Flock established 1770. Inspection invited of 2,000 registered Ewes and Rams, grazed only on Romney Marsh. Highest references to purchasers in South America, New Zealand, and at home. Selection always for sale.

Lincoln Long-Wools.

BROCKLEBANK, JOSEPH, CARLTON-LE-MOORLAND, NEWARK. Pure-bred Lincoln Long-wool Sheep, Flock 10. Large numbers are sold for export every year. Given satisfaction both

SHEEP—*continued.*

at home and abroad. Inspection invited. Telegrams: Bassingham. Station: Navenby.

Oxford Downs.

HICKS-BEACH, HON. MICHAEL, M.P., COLN ST. ALDWYN, FAIRFORD, GLOUCESTERSHIRE. Pedigree Flock Oxford Down Sheep. Prize-winners. Rams and Ewes for sale. Particulars on application to bailiff.

HOBBS, R. W. & SONS, KELMSCOTT, LECHLADE. Largest flock in Oxford Down Flock Book. Numerous prizes at principal shows. Rams or Ram Lambs always on sale. Drafts of Rams sold annually, Oxford, Cirencester, Edinburgh, Kelso, Northampton, and other fairs.

Ryeland.

RYELAND SHEEP. Pedigree and prize-winners at various shows, Royal Worcester, Abergavenny, and others. Rams and young stock always on sale. Inspection invited. Apply, C. L. Herbert, Clytha Park, Abergavenny.

Southdowns.

CADOGAN, RIGHT HON. EARL, K.G. Southdown Sheep. Pedigree stock. This flock has won very many prizes and silver medals. For particulars apply M. Mortimer, Estate Office, Culford, Bury St. Edmunds.

Stenhouse Black-faced.

STENHOUSE BLACKFACED SHEEP. Flock bred from prize rams, and no expense spared to secure the best rams sold in Scotland. Ewes reared on sound, high greenland, 1,000 feet, and stock guaranteed suitable for any climate. Inspection invited. D. M. MacRae, Stenhouse, Thornhill, Dumfriesshire.

PIGS.

Berkshires.

RANSOME, C. W., BRANDESTON, SUFFOLK. Pedigree Berkshires, large sort. Stock boar "Rex" (14995), won three 1st Prizes 1910. Vincent Sows.

THE HAMMONDS HERD OF PEDIGREE BERKSHIRES. Large and Middle White Pigs. Reared under natural conditions. Boars and Sows of the

PIGS—*continued.*

best breeding and quality at most moderate prices. Catalogue on application. Prizes won by the herd in 1911 at Royal Counties, Oxfordshire, and other Shows. Trains met at Reading and Goring Stations. S. H. Hart, Hammonds, Checkendon, Reading.

Large Blacks.

BANNISTER, T., LIMEHURST, HAYWARD HEATH, SUSSEX. For sale, Large Black Pigs of the best strains of blood. Noted for their docility and for the production of a large propoi tion of lean meat.

BRENT CHAMPION HERD PEDIGREE LARGE BLACK PIGS. Winners of numerous first and champion prizes, R.A.S.E., Bath and West, Royal Counties, Smithfield, &c. Superb heads, very typical, with great substance and length. Inspection cordially invited. Kingwell, Great Aish, Brent, Devon.

Large Whites.

"GREAT NORTHERN" HERD PEDIGREE LARGE WHITE PIGS. Stock Boars, 1st Prize Newark and 1st Prize and Reserve Champion, Nottingham, 1911. Young Boars and Gilts at reasonable prices. Inspection invited. One minute from station. Apply, A. Gooderidge, G.N.R. Hotel, Peterborough.

HOSKING, EDWIN, ROSEVIDNEY, LUDGVAN, CORNWALL. Large White Pigs. Size and quality from prize winners. For sale also Shropshire Sheep from 1st Prize and Champion Ram at Royal Cornwall Show, beating Royal winner.

HYDEHALL HERD PEDIGREE LARGE WHITE PIGS. Young Boars and Gilts of the best strains for sale, at moderate prices. Apply, R. W. Dannatt, Hyde Hall, Great Waltham, Chelmsford, Essex.

WHITE, ALFRED W., HILLEGOM, SPALDING. Breeder of Pedigree Large White Pigs. Winner of many champion prizes, at R.A.S.E. and principal shows. Young stock always for sale.

Middle Whites.

THE DUKE OF ARGYLL, K.G., THE HOME FARM, ROSNEATH CASTLE, DUMBARTONSHIRE. Middle White Boars and Gilts. Herd includes winners at Royal and Bath and West Shows. Apply, Mr. Robert Ament. Telegrams: Ament, Rosneath.

THE STAPLEFORD PARK HERD. Middle White Pigs. A few Gilts and Boars for Sale. Apply, C. S. Harvey, Wymondham, Oakham.

Tamworths.

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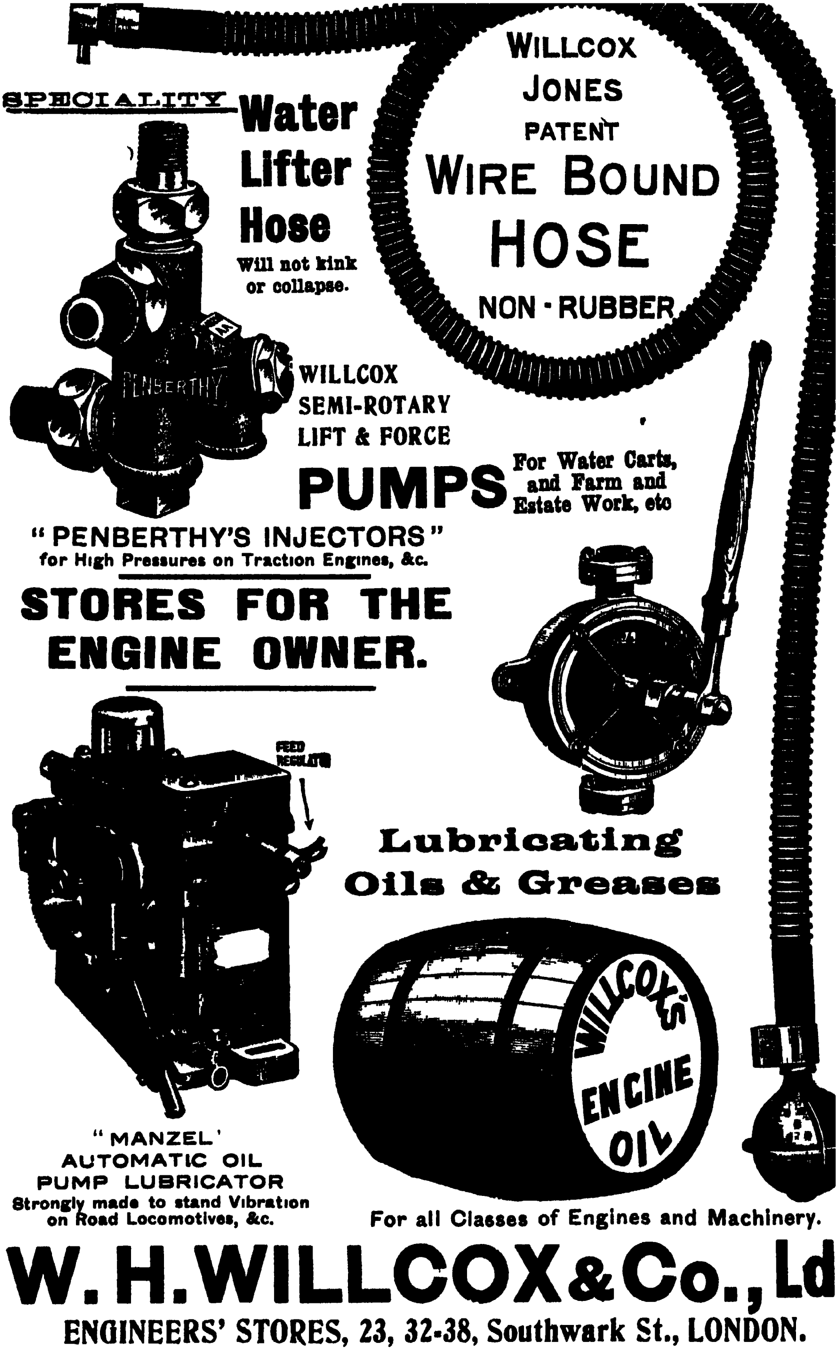
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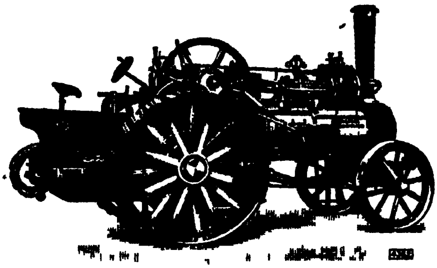

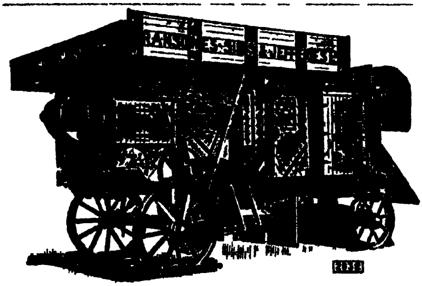

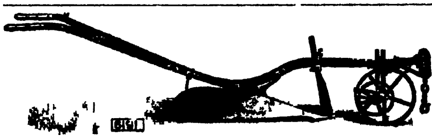

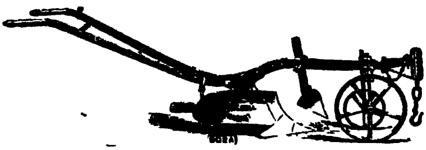

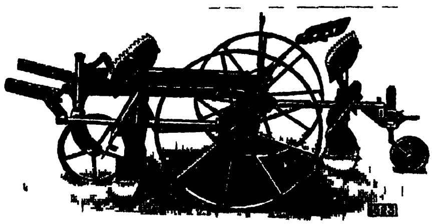

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